

22.1 Affected Environment/Environmental Setting

The Plan Area (the area covered by the BDCP) consists of the Sacramento–San Joaquin River Delta, the Suisun Marsh, the Yolo Bypass, and the Areas of Additional Analysis, as discussed in Chapter 3, *Description of Alternatives*, Section 3.3.1. Sensitive receptors associated with residential and recreational land uses are located in the Plan Area. The potential air quality and greenhouse gas (GHG) effects of the proposed water conveyance facility (Conservation Measure [CM] 1) on these receptors are evaluated quantitatively at the project level, and the effects of CM2–CM21 are evaluated qualitatively at the program level, consistent with the approach described in Chapter 4, *Approach to the Environmental Analysis*, Section 4.1.2.

More reliable water exports could facilitate new growth and development in the State Water Project (SWP) and Central Valley Project (CVP) Export Service Areas). Impacts on air quality associated with this growth are addressed in Chapter 30, *Growth Inducement and Other Indirect Effects*, Section 30.3.3.2.

This section describes existing conditions related to air quality and GHG in the air quality study area (the area in which impacts may occur). It then discusses federal, state, and local regulations related to air quality that would apply to the alternatives. The chapter assesses local and regional air quality impacts associated with criteria pollutants and toxic air contaminants (TAC) generated by construction and operation of the BDCP alternatives. With respect to GHGs, the chapter evaluates the impact of the BDCP alternatives on climate change (i.e., the project’s contribution to elevated GHG concentrations in the atmosphere). Potential effects of climate change on specific resources (e.g., land use) are discussed qualitatively for applicable resource topics throughout this document. Resource chapters that rely on CALSIM II/DSM2 modeling results address potential climate change and sea-level rise for the No Action and BDCP alternatives. The ability for the BDCP alternatives to affect the resiliency and adaptability of the Plan Area to the effects of climate change is described in Chapter 29, *Climate Change*.

The study area (i.e., the area in which impacts may occur) for the analysis of air quality effects is the area immediately surrounding and within 1,000 feet of the construction and operational fence line. The study area for GHGs is much broader due to the global nature of climate change. While the GHG analysis focuses on emissions generated at the project site as a result of construction and operation, the analysis considers potential regional and global GHG effects.

22.1.1 Regional Climate and Meteorology

The primary factors that determine air quality are the locations of air pollutant sources and the amount of pollutants emitted from those sources. Meteorological and topographical conditions are also important—atmospheric conditions, such as wind speed, wind direction, and air temperature gradients, interact with the physical features of the landscape to determine the movement and dispersal of air pollutants. Land use and land management also contribute to microclimates through the absorption and emission of GHG emissions (discussed further below).

1 California is divided into 15 air basins based on geographic features that create distinctive regional
 2 climates. The air quality study area encompasses the following three air basins: Sacramento Valley
 3 Air Basin (SVAB), San Joaquin Valley Air Basin (SJVAB), and the San Francisco Bay Area Air Basin
 4 (SFBAAB). The following section discusses climate and meteorological information associated with
 5 these three basins. Figure 22-1 highlights the three air basins in the study area.

6 **22.1.1.1 Sacramento Valley Air Basin**

7 The SVAB is bounded on the north by the Cascade Range, on the south by the SJVAB, on the east by
 8 the Sierra Nevada, and on the west by the Coast Ranges. The SVAB contains all of Tehama, Glenn,
 9 Butte, Colusa, Yolo, Sutter, Yuba, Sacramento, and Shasta Counties, as well as a portion of Solano and
 10 Placer Counties (CCR § 60106).

11 The SVAB has a Mediterranean climate characterized by hot, dry summers and cool, rainy winters.
 12 During winter, the north Pacific storm track intermittently dominates Sacramento Valley weather,
 13 and fair weather alternates with periods of extensive clouds and precipitation. Periods of dense and
 14 persistent low-level fog, which is most prevalent between storms, are also characteristic of winter
 15 weather in the valley. The frequency and persistence of heavy fog in the valley diminish with the
 16 approach of spring. The average yearly temperature range for the Sacramento Valley is 20°F to
 17 115°F, with summer high temperatures often exceeding 90°F and winter low temperatures
 18 occasionally dropping below freezing.

19 In general, the prevailing winds are moderate in strength and vary from moist clean breezes from
 20 the south to dry land flows from the north. The mountains surrounding the SVAB create a barrier to
 21 airflow that can trap air pollutants under certain meteorological conditions. The highest frequency
 22 of air stagnation occurs in the autumn and early winter when large high-pressure cells collect over
 23 the Sacramento Valley. The lack of surface wind during these periods and the reduced vertical flow
 24 caused by less surface heating reduce the influx of outside air and allow air pollutants to become
 25 concentrated in a stable volume of air. The surface concentrations of pollutants are highest when
 26 these conditions are combined with temperature inversions (warm air over cool air), which trap
 27 pollutants near the ground.

28 The ozone season (May through October) in the Sacramento Valley is characterized by stagnant
 29 morning air or light winds with the Delta sea breeze arriving in the afternoon out of the southwest.
 30 Usually the evening breeze transports the airborne pollutants to the north out of the Sacramento
 31 Valley. During about half of the days from July to September, however, a phenomenon called the
 32 Schultz eddy prevents this from occurring. Instead of allowing the prevailing wind patterns to move
 33 north carrying the pollutants out, the Schultz eddy causes the wind pattern to circle back to the
 34 south. Essentially, this phenomenon causes the air pollutants to be blown south toward the
 35 Sacramento Valley and Yolo County. This phenomenon has the effect of exacerbating the pollution
 36 levels in the area and increases the likelihood of violating federal or state standards. The eddy
 37 normally dissipates around noon when the Delta sea breeze arrives (Yolo-Solano Air Quality
 38 Management District 2007).

39 **22.1.1.2 San Joaquin Valley Air Basin**

40 The SJVAB is bounded by the Sierra Nevada to the east, the Coast Ranges to the west, and the
 41 Tehachapi Mountains to the south. The SJVAB contains all of San Joaquin, Stanislaus, Merced,
 42 Madera, Fresno, Kings, and Tulare Counties, as well as a portion of Kern County (CCR § 60107).

1 The area has an inland Mediterranean climate that is characterized by warm, dry summers and cool
 2 winters. Summer high temperatures often exceed 100°F, averaging in the low 90s in the northern
 3 valley and high 90s in the southern portion.

4 Although marine air generally flows into the basin from the Delta, the surrounding mountain ranges
 5 restrict air movement through and out of the valley. Wind speed and direction influence the
 6 dispersion and transportation of pollutants—the more wind flow, the less accumulation.

7 The vertical dispersion of air pollutants in the SJVAB is limited by the presence of persistent
 8 temperature inversion. Due to differences in air density, the air above and below the inversion do
 9 not mix. Air pollutants tend to collect under an inversion, leading to higher concentrations of
 10 emitted pollutants.

11 Precipitation and fog tend to reduce pollutant concentrations. Ozone needs sunlight for its
 12 formation, and clouds and fog block the required radiation. Precipitation in the San Joaquin Valley
 13 decreases from north to south, with approximately 20 inches in the north, 10 inches in the middle,
 14 and less than 6 inches in the south (San Joaquin Valley Air Pollution Control District 2002).

15 **22.1.1.3 San Francisco Bay Area Air Basin**

16 The SFBAAB contains all of Napa, Contra Costa, Alameda, Santa Clara, San Mateo, San Francisco, and
 17 Marin Counties, as well as a portions of Sonoma and Solano Counties (CCR § 60101). Climate within
 18 the SFBAAB is characterized by moderately wet winters and dry summers. Winter rains, which
 19 occur in the months of December through March, account for about 75% of the average annual
 20 rainfall.

21 Climate is affected by marine air flow and the basin's proximity to the San Francisco Bay. Bay
 22 breezes push air onshore during the daytime and draw air offshore at night. During the summer
 23 months, the bay helps to cool the warm onshore flows, while it warms the air during the winter
 24 months. This mediating effect keeps temperatures relatively consistent throughout the year. In the
 25 westernmost portion of the SFBAAB which encompasses the study area, the bay wind patterns can
 26 concentrate and carry air pollutants from other cities to the region, adding to the mix of pollutants
 27 that are emitted locally (Bay Area Air Quality Management District 2011).

28 **22.1.2 Background Information on Air Pollutants**

29 **22.1.2.1 Criteria Pollutants**

30 The federal and state governments have established national ambient air quality standards (NAAQS)
 31 and California ambient air quality standards (CAAQS), respectively, for six criteria pollutants: ozone,
 32 carbon monoxide (CO), lead (Pb), nitrogen dioxide (NO₂), sulfur dioxide (SO₂), and particulate
 33 matter (PM, which consists of PM10 microns in diameter or less (PM10) and PM 2.5 microns in
 34 diameter or less (PM2.5).

35 Ozone and NO₂ are considered regional pollutants because they (or their precursors) affect air
 36 quality on a regional scale; NO₂ reacts photochemically with reactive organic gases (ROG) to form
 37 ozone, and this reaction occurs at some distance downwind of the source of pollutants. Pollutants
 38 such as CO, SO₂, and Pb are considered to be local pollutants that tend to accumulate in the air
 39 locally. Particulate matter is considered to be a local and regional pollutant.

1 The principal characteristics surrounding the primary criteria pollutants of concern in the study
2 area are discussed below.

3 **Ozone**

4 Ozone is a respiratory irritant that can cause severe ear, nose, and throat irritation and increases
5 susceptibility to respiratory infections. It is also an oxidant that causes extensive damage to plants
6 through leaf discoloration and cell damage. It can cause substantial damage to other materials as
7 well, such as synthetic rubber and textiles.

8 Ozone is not emitted directly into the air but is formed by a photochemical reaction in the
9 atmosphere. Ozone precursors—ROG and nitrogen oxides (NO_x)—react in the atmosphere in the
10 presence of sunlight to form ozone. Because photochemical reaction rates depend on the intensity of
11 ultraviolet light and air temperature, ozone is primarily a summer air pollution problem. The ozone
12 precursors, ROG and NO_x, are mainly emitted by mobile sources and by stationary combustion
13 equipment.

14 Hydrocarbons are organic gases that are made up of hydrogen and carbon atoms. There are several
15 subsets of organic gases, including ROGs and volatile organic compounds (VOCs). ROGs are defined
16 by state rules and regulations; VOCs are defined by federal rules and regulations. For the purposes
17 of this assessment, hydrocarbons are classified and referred to as ROGs. Both ROGs and VOCs are
18 emitted from the incomplete combustion of hydrocarbons or other carbon-based fuels, or as a
19 product of chemical processes. The major sources of hydrocarbons are combustion engine exhaust,
20 oil refineries, and oil-fueled power plants; other common sources are petroleum fuels, solvents, dry-
21 cleaning solutions, and paint (through evaporation).

22 The health effects of hydrocarbons result from the formation of ozone. High levels of hydrocarbons
23 in the atmosphere can interfere with oxygen intake by reducing the amount of available oxygen
24 through displacement. Carcinogenic forms of hydrocarbons are considered TACs. There are no
25 separate health standards for ROGs, although some are also toxic; an example is benzene, which is
26 both an ROG and a carcinogen.

27 **Nitrogen Oxides**

28 Nitrogen oxides are a family of highly reactive gases that are a primary precursor to the formation of
29 ground-level ozone, and react in the atmosphere to form acid rain. Atmospheric reactions with NO_x
30 can also lead to the secondary formation of PM (see below). Nitrogen dioxide, often used
31 interchangeably with NO_x, is a brownish, highly reactive gas that is present in all urban
32 environments. The major human sources of NO₂ are combustion devices, such as boilers, gas
33 turbines, and mobile and stationary reciprocating internal combustion engines. Combustion devices
34 emit primarily nitric oxide (NO), which reacts through oxidation in the atmosphere to form NO₂ (U.S.
35 Environmental Protection Agency 2010). The combined emissions of NO and NO₂ are referred to as
36 NO_x and reported as equivalent NO₂. Because NO₂ is formed and depleted by reactions associated
37 with ozone, the NO₂ concentration in a particular geographical area may not be representative of
38 local NO_x emission sources.

39 Inhalation is the most common route of exposure to NO₂. Because NO₂ has relatively low solubility in
40 water, the principal site of toxicity is in the lower respiratory tract. The severity of the adverse
41 health effects primarily depends on the concentration inhaled rather than the duration of exposure.
42 An individual may experience a variety of acute symptoms, such as coughing, difficulty breathing,

1 vomiting, headache, and eye irritation during or shortly after exposure. After a period of
2 approximately 4–12 hours, an exposed individual may experience chemical pneumonitis or
3 pulmonary edema with breathing abnormalities, cough, cyanosis, chest pain, and rapid heartbeat.
4 Severe symptomatic NO₂ intoxication after acute exposure has been linked to prolonged respiratory
5 impairment, with such symptoms as chronic bronchitis and decreased lung function (U.S.
6 Environmental Protection Agency 2010).

7 **Carbon Monoxide**

8 CO has little effect on plants and materials, but it can have significant effects on human health. CO is
9 a public health concern because it combines readily with hemoglobin and thus reduces the amount
10 of oxygen transported in the bloodstream. Effects range from slight headaches to nausea to death.

11 Motor vehicles are the primary source of CO emissions in most areas. In the study area, high CO
12 levels are of greatest concern during the winter, when periods of light winds combine with the
13 formation of ground-level temperature inversions from evening through early morning. These
14 conditions trap pollutants near the ground, reducing the dispersion of vehicle emissions. Moreover,
15 motor vehicles exhibit increased CO emission rates at low air temperatures. Dramatic reductions in
16 CO levels across California, including a 50% decrease in statewide peak CO levels between 1980 and
17 2004, have been witnessed during the past several decades. These reductions are primarily a result
18 of California Air Resources Board (ARB) requirements for cleaner vehicles, equipment, and fuels
19 (California Air Resources Board 2004:1).

20 **Particulate Matter**

21 Particulate matter pollution consists of very small liquid and solid particles floating in the air, which
22 can include smoke, soot, dust, salts, acids, and metals. Particulate matter less than 10 microns in
23 diameter, about 1/7th the thickness of a human hair, is referred to as PM₁₀. Particulate matter that
24 is 2.5 microns or less in diameter, roughly 1/28th the diameter of a human hair, is referred to as
25 PM_{2.5}. Major sources of PM₁₀ include motor vehicles; wood burning stoves and fireplaces; dust
26 from construction, landfills, and agriculture; wildfires and brush/waste burning; industrial sources;
27 windblown dust from open lands; and atmospheric chemical and photochemical reactions. PM_{2.5}
28 results from fuel combustion (from motor vehicles, power generation, and industrial facilities),
29 residential fireplaces, and wood stoves. Particulate matter also forms when gases emitted from
30 industries and motor vehicles, such as SO₂, NO_x, and ROG, undergo chemical reactions in the
31 atmosphere.

32 PM₁₀ and PM_{2.5} pose a greater health threat than larger-size particles. When inhaled, these tiny
33 particles can penetrate the human respiratory system's natural defenses and damage the
34 respiratory tract. PM₁₀ and PM_{2.5} can increase the number and severity of asthma attacks, cause or
35 aggravate bronchitis and other lung diseases, and reduce the body's ability to fight infections. Very
36 small particles of substances, such as lead, sulfates, and nitrates, can cause lung damage directly.
37 These substances can be absorbed into the blood stream and cause damage elsewhere in the body;
38 they can also transport absorbed gases such as chlorides or ammonium into the lungs and cause
39 injury. Whereas particles 2.5 to 10 microns in diameter tend to collect in the upper portion of the
40 respiratory system, particles 2.5 microns or less are so tiny that they can penetrate deeper into the
41 lungs and damage lung tissues. Suspended particulates also damage and discolor surfaces on which
42 they settle, and contribute to haze and reduce regional visibility.

1 Sulfur Oxides

2 Sulfur oxides are any of several compounds of sulfur and oxygen, of which the most relevant to air
 3 quality is SO₂. SO₂ is produced by coal and oil combustion and such stationary sources as steel mills,
 4 refineries, and pulp and paper mills. The major adverse health effects associated with SO₂ exposure
 5 pertain to the upper respiratory tract. SO₂ is a respiratory irritant that causes the bronchioles to
 6 constrict with inhalation at 5 parts per million (ppm) or more. On contact with the moist mucous
 7 membranes, SO₂ produces sulfurous acid, which is a direct irritant. Concentration rather than
 8 duration of the exposure is an important determinant of respiratory effects. Exposure to high SO₂
 9 concentrations may result in edema of the lungs or glottis and respiratory paralysis.

10 22.1.2.2 Toxic Air Contaminants

11 Although NAAQS and CAAQS have been established for criteria pollutants, no ambient standards
 12 exist for TACs. Air toxics are generated by a number of sources, including: point sources, such as
 13 refineries and industrial plants; mobile sources, such as diesel trucks, ships, and trains; and area
 14 sources, such as dry cleaners, gas stations, and auto body shops. Adverse health effects of TACs can
 15 be carcinogenic (cancer-causing), short-term (acute) noncarcinogenic, and long-term (chronic)
 16 noncarcinogenic. Direct exposure to these pollutants has been shown to cause cancer, birth defects,
 17 damage to the brain and nervous system, and respiratory disorders. Toxicity of individual TACs is
 18 studied by the California Office of Environmental Health Hazard Assessment (OEHHA), which also
 19 issues guidance and methodologies for characterizing health risks from exposure to TACs.

20 In 1998, following a 10-year scientific assessment process, the ARB identified PM exhaust from
 21 diesel-fueled engines—commonly called diesel particulate matter (DPM)—as a TAC. Compared to
 22 other air toxics ARB has identified, DPM emissions are estimated to be responsible for about 70% of
 23 the total ambient air toxics risk (California Air Resources Board 2000:1). DPM emissions from diesel
 24 equipment and trucks are the primary TAC of concern associated with the proposed project.

25 22.1.2.3 Valley Fever

26 Valley Fever is not an air pollutant, but is a disease caused by inhaling *Coccidioides immitis* (C.
 27 *immitis*) fungus spores. The spores are found in certain types of soil and become airborne when the
 28 soil is disturbed. After the fungal spores have settled in the lungs, they change into a multicellular
 29 structure called a spherule. Valley Fever symptoms generally occur within 2 to 3 weeks of exposure.
 30 Approximately 60 percent of Valley Fever cases are mild and display flu-like symptoms or no
 31 symptoms at all. Of those who are exposed and seek medical treatment, the most common
 32 symptoms are fatigue, cough, chest pain, fever, rash, headache, and joint aches. While *C. immitis* is
 33 not typically found in the Sacramento or Bay Area, the fungus is endemic to the Central Valley. (U.S.
 34 Geological Survey 2000.)

35 22.1.3 Background Information on Climate Change and 36 Greenhouse Gas Emissions

37 22.1.3.1 Climate Change

38 The phenomenon known as the *greenhouse effect* keeps the atmosphere near the Earth's surface
 39 warm enough for the successful habitation of humans and other life forms. Present in the Earth's
 40 lower atmosphere, GHGs play a critical role in maintaining the Earth's temperature; GHGs trap some

1 of the long-wave infrared radiation emitted from the Earth's surface that would otherwise escape to
2 space (Figure 22-2). According to Assembly Bill 32 (AB 32), California's Global Warming Solutions
3 Act, GHGs include the following gases: carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O),
4 perfluorinated carbons (PFCs), sulfur hexafluoride (SF₆), and hydrofluorocarbons (HFCs). State
5 California Environmental Quality Act guidelines (CEQA Guidelines) (§15364.5) also identify these six
6 gases as GHGs.

7 Sunlight passes through the atmosphere including infrared, visible, and ultraviolet. Some of the
8 sunlight striking the earth is absorbed and converted to heat, which warms the surface. The surface
9 emits infrared radiation to the atmosphere, where some of it is absorbed by GHGs and re-emitted
10 toward the surface; some of the heat is not trapped by GHGs and escapes into space. Human
11 activities that emit additional GHGs to the atmosphere increase the amount of infrared radiation
12 that gets absorbed before escaping into space, thus enhancing the greenhouse effect and amplifying
13 the warming of the earth. (Center for Climate and Energy Solutions 2011.)

14 Increases in fossil fuel combustion and deforestation have exponentially increased concentrations of
15 GHGs in the atmosphere since the Industrial Revolution. Rising atmospheric concentrations of GHGs
16 in excess of natural levels enhance the greenhouse effect, which contributes to global warming of the
17 earth's lower atmosphere induces large-scale changes in ocean circulation patterns, precipitation
18 patterns, global ice cover, biological distributions, and other changes to the earth system that are
19 collectively referred to as climate change.

20 The Intergovernmental Panel on Climate Change (IPCC) has been established by the World
21 Meteorological Organization and United Nations Environment Programme to assess scientific,
22 technical, and socioeconomic information relevant to the understanding of climate change, its
23 potential impacts, and options for adaptation and mitigation. The IPCC estimates that the average
24 global temperature rise between the years 2000 and 2100 could range from 1.1° Celsius, with no
25 increase in GHG emissions above year 2000 levels, to 6.4° Celsius, with substantial increase in GHG
26 emissions (Intergovernmental Panel on Climate Change 2007a:97-115). Large increases in global
27 temperatures could have substantial adverse effects on the natural and human environments on the
28 planet and in California.

29 This chapter addresses the potential GHG emissions of the proposed BDCP. A more extensive
30 discussion of climate change and how the BDCP alternatives affect the study area's resiliency to
31 expected changes in climate can be found in Chapter 29, *Climate Change* Section 29.6. Within the
32 Delta Reform Act Water Code Section 85320 identifies the contents that the EIR portion of this Draft
33 EIR/EIS must include for the BDCP to be considered for inclusion in the Delta Plan prepared by the
34 Delta Stewardship Council. Section 85320(b)(2)(C) of the Water Code directs that the EIR address
35 "[t]he potential effects of climate change, *possible sea level rise up to 55 inches* [140 centimeters], and
36 possible changes in total precipitation and runoff patterns on the conveyance alternatives and
37 habitat restoration activities considered in the [EIR]." (Italics added.). Each resource chapter
38 evaluates how the BDCP alternatives would affect the specific resource in question. In each of these
39 analyses, where the effects of the BDCP alternatives are analyzed at future time periods, climate
40 change is integrated into the analysis. In these analyses, the BDCP alternatives are evaluated using a
41 projection of future climate that includes changes in temperature, precipitation, humidity,
42 hydrology, and sea level rise. These analyses fulfill the requirements for climate change analysis
43 outlined in the Delta Reform Act of 2009 (Cal. Water Code, § 85000 *et seq.*).

22.1.3.2 Principal Greenhouse Gas Emissions Generated by the Alternatives

The primary GHGs generated by the alternatives would be CO₂, CH₄, N₂O, and SF₆. A small amount of HFCs may also be generated by leaking air conditioners in onroad vehicles. Each of these gases is discussed in detail below. Note that PFCs are not discussed as these gases are primarily generated by industrial and manufacturing processes, which are not anticipated as part of the project.

To simplify reporting and analysis, methods have been set forth to describe emissions of GHGs in terms of a single gas. The most commonly accepted method to compare GHG emissions is the global warming potential (GWP) methodology defined in the IPCC reference documents. The IPCC defines the GWP of various GHG emissions on a normalized scale that recasts all GHG emissions in terms of CO₂ equivalent (CO₂e), which compares the gas in question to that of the same mass of CO₂ (CO₂ has a global warming potential of 1 by definition).

Table 22-1 lists the global warming potential of CO₂, CH₄, N₂O, SF₆, and HFCs; their lifetimes; and abundances in the atmosphere.

Table 22-1. Lifetimes and Global Warming Potentials of Several Greenhouse Gases

Greenhouse Gases	Global Warming Potential (100 years)	Lifetime (years)	2014 Atmospheric Abundance
CO ₂ (ppm) ^a	1	50–200	394
CH ₄ (ppb)	28	9–15	1,893
N ₂ O (ppb)	265	121	326
SF ₆ (ppt) ^a	23,500	3,200	7.8
HFC-23 (ppt)	12,400	222	18
HFC-134a (ppt)	1,300	13.4	75
HFC-152a (ppt)	138	1.5	3.9

Sources: Myhre et al. 2013; Blasing 2014; National Oceanic and Atmospheric Administration 2014.

ppm = parts per million by volume.

ppb = parts per billion by volume.

ppt = parts per trillion by volume.

Carbon Dioxide

CO₂ is the most important anthropogenic GHG and accounts for more than 75% of all GHG emissions caused by humans. Its atmospheric lifetime of 50–200 years ensures that atmospheric concentrations of CO₂ will remain elevated for decades even after mitigation efforts to reduce GHG concentrations are promulgated (Intergovernmental Panel on Climate Change 2007a). The primary sources of anthropogenic CO₂ in the atmosphere include the burning of fossil fuels (including motor vehicles), gas flaring, cement production, and land use changes (e.g., deforestation, oxidation of elemental carbon). CO₂ can also be removed from the atmosphere by photosynthetic organisms.

Atmospheric CO₂ has increased from a pre-industrial concentration of 280 ppm to 394 ppm in 2014 (Intergovernmental Panel on Climate Change 2007b; National Oceanic and Atmospheric Administration 2014).

1 Methane

2 CH₄, the main component of natural gas, is the second most abundant GHG and has a GWP of 28
3 (Myhre et al. 2013). Sources of anthropogenic emissions of CH₄ include growing rice, raising cattle,
4 using natural gas, landfill outgassing, and mining coal. (National Oceanic and Atmospheric
5 Administration 2005). Certain land uses also function as a both a source and sink for CH₄. For
6 example, wetlands are a terrestrial source of CH₄, whereas undisturbed, aerobic soils act as a CH₄
7 sink (i.e., they remove CH₄ from the atmosphere).

8 Atmospheric CH₄ has increased from a pre-industrial concentration of 715 ppb to 1,893 ppb in 2014
9 (Intergovernmental Panel on Climate Change 2007b; Blasing 2014).

10 Nitrous Oxide

11 N₂O is a powerful GHG with a GWP of 265 (Myhre et al. 2013). Anthropogenic sources of N₂O include
12 agricultural processes (e.g., fertilizer application), nylon production, fuel-fired power plants, nitric
13 acid production, and vehicle emissions. N₂O also is used in rocket engines, racecars, and as an
14 aerosol spray propellant. Natural processes, such as nitrification and denitrification, can also
15 produce N₂O, which can be released to the atmosphere by diffusion. In the United States (U.S.) more
16 than 70% of N₂O emissions are related to agricultural soil management practices, particularly
17 fertilizer application.

18 N₂O concentrations in the atmosphere have increased 18% from pre-industrial levels of 270 ppb to
19 326 ppb in 2014 (Intergovernmental Panel on Climate Change 2007b; Blasing 2014).

20 Sulfur Hexafluoride

21 SF₆, a human-made chemical, is used as an electrical insulating fluid for power distribution
22 equipment, in the magnesium industry, in semiconductor manufacturing, and also as a tracer
23 chemical for the study of oceanic and atmospheric processes (U.S. Environmental Protection Agency
24 2006a). In 2014, atmospheric concentrations of SF₆ were 7.8 parts per trillion (ppt) and steadily
25 increasing in the atmosphere (Blasing 2014). SF₆ is the most powerful of all GHGs listed in IPCC
26 studies, with a GWP of 23,500 (Myhre et al. 2013).

27 Hydrofluorocarbons

28 HFCs are human-made chemicals used in commercial, industrial, and consumer products and have
29 high GWPs. HFCs are generally used as substitutes for ozone-depleting substances in automobile air
30 conditioners and refrigerants. Within the transportation sector, HFCs from leaking air conditioning
31 units represent about 3% of total onroad emissions (United States Environmental Protection Agency
32 2007).

33 22.1.3.3 Greenhouse Gas Emissions Inventories

34 A GHG inventory is a quantification of all GHG emissions and sinks within a selected physical and/or
35 economic boundary. GHG inventories can be performed on a large scale (i.e., for global and national
36 entities) or on a small scale (i.e., for a particular building or person). Although many processes are
37 difficult to evaluate, several agencies have developed tools to quantify emissions from certain
38 sources.

1 Table 22-2 outlines the most recent global, national, statewide, and local GHG inventories to help
2 contextualize the magnitude of potential project-related emissions.

3 **Table 22-2. Global, National, State, and Local GHG Emissions Inventories**

Emissions Inventory ^a	CO ₂ e (metric tons)
2004 IPCC Global GHG Emissions Inventory	49,000,000,000
2012 EPA National GHG Emissions Inventory	6,526,000,000
2012 ARB State GHG Emissions Inventory	458,680,000
2007 SFBAAB GHG Emissions Inventory	95,800,000
2005 Sacramento County GHG Emissions Inventory	12,422,425
2008 Yolo County Unincorporated GHG Emissions Inventory	651,470

Sources: Intergovernmental Panel on Climate Change 2007a; U.S. Environmental Protection Agency 2014a; California Air Resources Board 2014a; ICF International 2012; Bay Area Air Quality Management District 2010; Yolo County 2011.

^a GHG emissions inventories for Yolo County and the SJVAB are currently unavailable.

4

5 **22.1.4 Existing Air Quality Conditions**

6 The existing air quality conditions in the study area can be characterized by monitoring data
7 collected in the region. Table 22-3 summarizes data for criteria air pollutant levels from monitoring
8 stations in the SVAB, SJVAB, and SFBAAB for the last 3 years for which complete data are available
9 (2011–2013). Air quality concentrations are expressed in terms of ppm or micrograms per cubic
10 meter ($\mu\text{g}/\text{m}^3$). As shown in Table 22-3, the monitoring stations have experienced exceedances of
11 the NAAQS and CAAQS for all pollutants except CO and NO₂.

12 **22.1.4.1 Attainment Status**

13 Local monitoring data (Table 22-3) are used to designate areas as nonattainment, maintenance,
14 attainment, or unclassified for the NAAQS and CAAQS. The four designations are further defined as:

- 15 ● Nonattainment—assigned to areas where monitored pollutant concentrations consistently
16 violate the standard in question.
- 17 ● Maintenance—assigned to areas where monitored pollutant concentrations exceeded the
18 standard in question in the past but are no longer in violation of that standard.
- 19 ● Attainment—assigned to areas where pollutant concentrations meet the standard in question
20 over a designated period of time.
- 21 ● Unclassified—assigned to areas where data are insufficient to determine whether a pollutant is
22 violating the standard in question.

23 Table 22-4 summarizes the attainment status of the portions of the study area within the SVAB
24 SJVAB, and SFBAAB with regard to the NAAQS and CAAQS.

25 **22.1.5 Sensitive Receptors**

26 The NAAQS and CAAQS apply at publicly accessible areas, regardless of whether those areas are
27 populated. For the purposes of air quality analysis, sensitive land uses are defined as locations

1 where human populations, especially children, seniors, and sick persons, are located and where
2 there is reasonable expectation of continuous human exposure according to the averaging period for
3 the air quality standards (e.g., 24-hour, 8-hour, and 1-hour). Typical sensitive receptors include
4 residences, hospitals, and schools. Please refer to Chapter 23, *Noise*, Section 23.2.3, for additional
5 information on sensitive receptors in the study area.
6

1 **Table 22-3. Ambient Air Quality Monitoring Data for the SVAB, SJVAB, SFBAAB (2011–2013)**

Pollutant Standards	SVAB (T Street & El Camino)			SJVAB (Stockton)			SFBAAB (Bethel Island & Concord)		
	2011	2012	2013	2011	2012	2013	2011	2012	2013
Ozone (O₃)									
Maximum 1-hour concentration (ppm)	0.100	0.104	0.091	0.089	0.097	0.080	0.091	0.098	0.082
Maximum 8-hour concentration (ppm)	0.087	0.092	0.068	0.068	0.083	0.067	0.078	0.087	0.075
Number of days standard exceeded ^a									
CAAQS 1-hour (>0.09 ppm)	1	1	0	0	1	0	0	1	0
CAAQS 8-hour (>0.070 ppm)	5	9	0	0	2	0	4	4	1
NAAQS 8-hour (>0.075 ppm)	1	4	0	0	6	0	2	2	0
Carbon Monoxide (CO)									
Maximum 8-hour concentration (ppm)	2.83	2.14	-	2.13	1.78	-	0.95	0.89	-
Maximum 1-hour concentration (ppm)	3.0	2.7	3.0	3.2	3.0	2.7	1.4	1.5	1.0
Number of days standard exceeded ^a									
NAAQS 8-hour (≥9 ppm)	0	0	0	0	0	0	0	0	0
CAAQS 8-hour (≥9.0 ppm)	0	0	0	0	0	0	0	0	0
NAAQS 1-hour (≥35 ppm)	0	0	0	0	0	0	0	0	0
CAAQS 1-hour (≥20 ppm)	0	0	0	0	0	0	0	0	0
Nitrogen Dioxide (NO₂)									
State maximum 1-hour concentration (ppm)	57	62	59	62	78	62	35	32	33
State second-highest 1-hour concentration (ppm)	53	56	56	59	58	61	34	30	32
Annual average concentration (ppm)	13	12	12	16	14	15	6	6	-
Number of days standard exceeded									
CAAQS 1-hour (0.18 ppm)	0	0	0	0	0	0	0	0	0
Particulate Matter (PM₁₀)^b									
National ^c maximum 24-hour concentration (μg/m ³)	38.8	36.2	53.1	66.1	69.4	90.1	46.8	51.4	47.4
National ^c second-highest 24-hour concentration (μg/m ³)	38.1	33.6	45.4	53.0	58.2	69.4	44.3	29.5	45.5
State ^d maximum 24-hour concentration (μg/m ³)	42.2	36.7	92.3	70.1	70.0	95.5	49.5	52.3	50.7
State ^d second-highest 24-hour concentration (μg/m ³)	39.3	35.6	66.8	57.8	61.7	74.0	45.8	31.4	48.5
National annual average concentration (μg/m ³)	18.4	17.2	14.4	23.3	22.4	31.3	17.3	13.8	8.5
State annual average concentration (μg/m ³) ^e	19.2	17.8	-	24.1	22.8	32.0	17.9	14.1	-
Number of days standard exceeded ^a									
NAAQS 24-hour (>150 μg/m ³) ^f	0	0	-	0	0	0	0	0	0
CAAQS 24-hour (>50 μg/m ³) ^f	0	0	21	24	18	58	0	6	1

Table 22-3. Continued

Pollutant Standards	SVAB (T Street & El Camino)			SJVAB (Stockton)			SFBAAB (Bethel Island & Concord)		
	2011	2012	2013	2011	2012	2013	2011	2012	2013
Particulate Matter (PM_{2.5})									
National ^c maximum 24-hour concentration (µg/m ³)	50.5	27.1	39.2	60.0	60.4	65.5	47.5	32.2	36.2
National ^c second-highest 24-hour concentration (µg/m ³)	47.8	26.7	35.9	53.1	45.0	64.4	39.7	30.0	29.5
State ^d maximum 24-hour concentration (µg/m ³)	50.5	40.8	40.2	65.5	60.4	66.5	47.5	32.2	36.2
State ^d second-highest 24-hour concentration (µg/m ³)	47.8	31.1	39.4	59.5	45.0	64.4	39.7	30.0	29.5
National annual average concentration (µg/m ³)	10.1	8.3	10.0	11.3	12.3	17.6	7.8	6.6	7.6
State annual average concentration (µg/m ³) ^e	10.1	-	10.1	14.0	12.4	-	7.9	6.6	7.6
Number of days standard exceeded ^a									
NAAQS 24-hour (>35 µg/m ³)	18	0	6	11	6	28	2	0	1
Sulfur Dioxide (SO₂)									
No data available									

Source: California Air Resources Board 2014b; United States Environmental Protection Agency 2014b.

ppm = parts per million.

NAAQS = National Ambient Air Quality Standards.

CAAQS = California Ambient Air Quality Standards.

µg/m³ = micrograms per cubic meter.

mg/m³ = milligrams per cubic meter.

> = greater than.

NA = not applicable.

^a An exceedance is not necessarily a violation.

^b National statistics are based on standard conditions data. In addition, national statistics are based on samplers using federal reference or equivalent methods.

^c State statistics are based on local conditions data, except in the South Coast Air Basin, for which statistics are based on standard conditions data. In addition, State statistics are based on California approved samplers.

^d Measurements usually are collected every 6 days.

^e State criteria for ensuring that data are sufficiently complete for calculating valid annual averages are more stringent than the national criteria.

^f Mathematical estimate of how many days concentrations would have been measured as higher than the level of the standard had each day been monitored. Values have been rounded.

1 **Table 22-4. Federal and State Attainment Status of the Study Area within the SVAB, SJVAB, and SFBAAB**

Pollutant	SVAB		SJVAB		SFBAAB	
	Federal	State	Federal	State	Federal	State
Ozone (8 hr)	N (severe-15)	N ^a	N (extreme)	N	N (marginal)	N
CO	M ^a (moderate)	A/U	M ^a (moderate)	A/U	M ^a (moderate)	A/U
PM10	M ^a (moderate)	N	M (serious)	N	A/U	N
PM2.5	N	N ^a	N	N	N	N

Sources: U.S. Environmental Protection Agency 2014c; California Air Resources Board 2014c.

A/U = Attainment/Unclassified.

CO = Carbon Monoxide

M = Maintenance.

N = Nonattainment.

PM10 = particulate matter 10 microns in diameter or less

PM2.5 = particulate matter 2.5 microns in diameter or less

^a Applies only to a portion of the air basin that the study area crosses.

2

3 **22.2 Regulatory Setting**

4 The study area is subject to air quality regulations developed and implemented at the federal, state,
5 and local levels. At the federal level, the U.S. Environmental Protection Agency (EPA) is responsible for
6 implementation of the Clean Air Act (CAA). Some portions of the CAA (e.g., certain mobile-source and
7 other requirements) are implemented directly by EPA. Other portions of the CAA (e.g., stationary-
8 source requirements) are implemented by state and local agencies.

9 Responsibility for attaining and maintaining air quality in California is divided between ARB and
10 regional air quality districts. Areas of control for the regional districts are set by ARB, which divides
11 the state into air basins. Plans, policies, and regulations relevant to the alternatives are discussed
12 below.

13 **22.2.1 Federal Plans, Policies, and Regulations**

14 The following federal regulations related to air quality may apply to implementation of some aspects
15 of the BDCP water conveyance facility and the conservation measures. The regulations act as
16 performance standards for engineers and construction contractors; their implementation is
17 considered an environmental commitment of the agencies implementing the BDCP. This commitment
18 is discussed further in Appendix 3B, *Environmental Commitments*.

1 **22.2.1.1 Criteria Pollutants**

2 **Clean Air Act and National Ambient Air Quality Standards**

3 The federal CAA, promulgated in 1963 and amended several times thereafter, including the 1990
4 Clean Air Act amendments (CAAA), establishes the framework for modern air pollution control. The
5 act directs the EPA to establish NAAQS for the six criteria pollutants (discussed in Section 22.1.2). The
6 NAAQS are divided into primary and secondary standards; the former are set to protect human health
7 within an adequate margin of safety, and the latter to protect environmental values, such as plant and
8 animal life. Table 22-5 summarizes the NAAQS.¹

9 The CAA requires states to submit a state implementation plan (SIP) for areas in nonattainment for
10 federal standards. The SIP, which is reviewed and approved by EPA, must demonstrate how the
11 federal standards would be achieved. Failing to submit a plan or secure approval can lead to denial of
12 federal funding and permits. In cases where the SIP is submitted by the state but fails to demonstrate
13 achievement of the standards, EPA is directed to prepare a federal implementation plan.

¹ Table 22-5 presents all adopted NAAQS and CAAQS for reference and context. As discussed in Section 22.1.2.1, the pollutants of concern in the air quality study area and generated by the project are ozone precursors (ROG and NO_x), CO, PM_{2.5}, PM₁₀, and SO_x. Accordingly, this EIR/EIS focuses on these pollutants.

Table 22-5. National and California Ambient Air Quality Standards

Pollutant	Symbol	Average Time	Standard (ppm)		Standard ($\mu\text{g}/\text{m}^3$)		Violation Criteria	
			California	National	California	National	California	National
Ozone*	O ₃	1 hour	0.09	-	180	-	If exceeded	-
		8 hours	0.070	0.075	137	147	If exceeded	If fourth-highest 8-hour concentration in a year, averaged over 3 years, is exceeded at each monitor in an area
Carbon monoxide (Lake Tahoe only)	CO	8 hours	9.0	9	10,000	10,000	If exceeded	If exceeded on more than 1 day per year
		1 hour	20	35	23,000	40,000	If exceeded	If exceeded on more than 1 day per year
		8 hours	6	-	7,000	-	If equaled or exceeded	-
Nitrogen dioxide	NO ₂	Annual arithmetic mean	0.030	0.053	57	100	If exceeded	If exceeded on more than 1 day per year
		1 hour	0.18	0.100	339	188	If exceeded	-
Sulfur dioxide	SO ₂	24 hours	0.04	0.14	105	365	If exceeded	-
		1 hour	0.25	0.075	655	196	If exceeded	If exceeded on more than 1 day per year
		3 hours	-	0.50*	-	1,300*	-	-
		Annual arithmetic mean	-	0.030	-	80	-	If exceeded on more than 1 day per year
Hydrogen sulfide	H ₂ S	1 hour	0.03	-	42	-	If equaled or exceeded	-
Vinyl chloride	C ₂ H ₃ Cl	24 hours	0.01	-	26	-	If equaled or exceeded	-
Inhalable particulate matter	PM ₁₀	Annual arithmetic mean	-	-	20	-	-	-
		24 hours	-	-	50	150	If exceeded	If exceeded on more than 1 day per year
	PM _{2.5}	Annual arithmetic mean	-	-	12	12.0	-	If 3-year average from single or multiple community-oriented monitors is exceeded
		24 hours	-	-	-	35	-	If 3-year average of 98 th percentile at each population-oriented monitor in an area is exceeded
Sulfate particles	SO ₄	24 hours	-	-	25	-	If equaled or exceeded	-
		Calendar quarter	-	-	-	1.5	-	If exceeded no more than 1 day per year
Lead particles	Pb	30-day average	-	-	1.5	-	If equaled or exceeded	-
		Rolling 3-month average	-	-	-	0.15	If equaled or exceeded	Averaged over a rolling 3-month period

Source: California Air Resources Board 2013.

* = secondary standard.

ppm = parts per million.

 $\mu\text{g}/\text{m}^3$ = micrograms per cubic meter.

1 **General Conformity Regulation**

2 EPA enacted the federal General Conformity regulation (40 CFR Parts 5, 51, and 93) in 1993. The
 3 purpose of the General Conformity rule is to ensure that federal actions do not generate emissions
 4 that interfere with state and local agencies' SIPs and emission-reduction strategies to ensure
 5 attainment of the NAAQS.

6 The General Conformity rule applies to all federal actions located in nonattainment and maintenance
 7 areas that are not exempt from General Conformity (are either covered by Transportation
 8 Conformity or listed in the rule), are not covered by a Presumed-to-Conform approved list², or do
 9 not have clearly *de minimis* emissions. In addition, the General Conformity rule applies only to direct
 10 and indirect emissions associated with the portions of any federal action that are subject to New
 11 Source Review (i.e., do not include stationary industrial sources requiring air quality permits from
 12 local air pollution control agencies) for which a federal permitting agency has directly caused or
 13 initiated, has continued program responsibility for, or can practically control. Because of the
 14 involvement of the Bureau of Reclamation (Reclamation), U.S. Fish and Wildlife Service (USFWS),
 15 and National Marine Fisheries Service (NMFS), all direct and indirect emissions generated by the
 16 construction and operation are subject to General Conformity.

17 The alternatives would generate air pollutant emissions from activities located within the SVAB,
 18 SJVAB, and SFBAAB. As shown in Table 22-4, one or more of these basins is classified as a federal
 19 nonattainment and/or maintenance area with respect to ozone, CO, PM10, and PM2.5. Consequently,
 20 a conformity evaluation must be undertaken to determine whether all emission sources (e.g., haul
 21 trucks, off-road equipment) that operate on BDCP components are subject to the General
 22 Conformity rule. Because the alternatives are neither exempt nor presumed to conform and are not
 23 subject to transportation conformity, the evaluation of whether the alternatives are subject to the
 24 General Conformity rule is made by comparing all annual emissions to the applicable General
 25 Conformity *de minimis* thresholds (Tables 22-6 and 22-7). If the conformity evaluation indicates that
 26 emissions are in excess of any of the General Conformity *de minimis* thresholds, the applicant must
 27 perform a conformity determination. A conformity determination is made by satisfying any of the
 28 following requirements.

- 29 ● Showing that the emission increases caused by the federal action are included in the SIP.
- 30 ● Demonstrating that the State agrees to include the emission increases in the SIP.
- 31 ● Offsetting the action's emissions in the same or nearby area.
- 32 ● Mitigating to reduce the emission increase.
- 33 ● Utilizing a combination of the above strategies.

² Category of activities designated by a Federal agency as having emissions below *de minimis* levels or otherwise do not interfere with the applicable SIP or the attainment and maintenance of the national ambient air quality standard.

1 **Table 22-6. Federal *de minimis* Threshold Levels for Criteria Pollutants in Nonattainment Areas**
 2 **(tons per year)**

Pollutant	Emission Rate (tons per year)
Ozone (ROG/VOC or NO_x)	
Serious nonattainment areas	50
<u>Severe nonattainment areas</u>	<u>25</u>
<u>Extreme nonattainment areas</u>	<u>10</u>
<u>Other ozone nonattainment areas outside an ozone transport region¹</u>	<u>100</u>
Other ozone nonattainment areas inside an ozone transport region¹	
ROG/VOC	50
NO _x	100
CO: All nonattainment areas	100
SO ₂ or NO ₂ : All nonattainment areas	100
PM10	
<u>Moderate nonattainment areas</u>	<u>100</u>
Serious nonattainment areas	70
PM2.5	
Direct emissions	<u>100</u>
SO ₂	<u>100</u>
NO _x (unless determined not to be a significant precursor)	<u>100</u>
ROG/VOC or ammonia (if determined to be significant precursors)	<u>100</u>
Pb: All nonattainment areas	25

Source: 40 CFR 93.153.

Notes: *de minimis* threshold levels for conformity applicability analysis.

Ozone Transport Region consists of the states of Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, the Consolidated Metropolitan Statistical Area that includes the District of Columbia and northern Virginia (Section 184 of the Clean Air Act).

Underlined text indicates pollutants for which the region is in non-attainment, and a conformity evaluation must be made.

3

1 **Table 22-7. Federal *de minimis* Threshold Levels for Criteria Pollutants in Maintenance Areas (tons**
 2 **per year)**

Pollutant	Emission Rate (tons per year)
Ozone (NO_x, SO₂, or NO₂)	
All maintenance areas	100
Ozone (ROG/VOC)	
Maintenance areas inside an ozone transport region ¹	50
Maintenance areas outside an ozone transport region ¹	100
<u>CO: All maintenance areas</u>	<u>100</u>
<u>PM10: All maintenance areas</u>	<u>100</u>
PM2.5	
Direct emissions	100
SO ₂	100
NO _x (unless determined not to be a significant precursor)	100
ROG/VOC or ammonia (if determined to be significant precursors)	100
Pb: All maintenance areas	25

Source: 40 CFR 93.153.

Notes: *de minimis* threshold levels for conformity applicability analysis.

Ozone Transport Region consists of the states of Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, the Consolidated Metropolitan Statistical Area that includes the District of Columbia and northern Virginia (Section 184 of the Clean Air Act).

Underlined text indicates pollutants for which the region is in maintenance, and a conformity determination must be made.

3

4 In the event that emissions associated with the alternatives exceed the General Conformity *de*
 5 *minimis* thresholds, the BDCP proponents will consult with the local applicable air quality
 6 management or pollution control district to ensure conformity determination is made.

7 **Federal Tailpipe Emission Standards**

8 To reduce emissions from off-road diesel equipment, onroad diesel trucks, and harbor craft, EPA
 9 established a series of increasingly strict emission standards for new engines. New construction
 10 equipment used for the project, including heavy-duty trucks, off-road construction equipment,
 11 tugboats, and barges, will be required to comply with the emission standards.

12 **22.2.1.2 Greenhouse Gases**

13 **Mandatory Greenhouse Gas Reporting Rule (2009)**

14 On September 22, 2009, EPA released its final Greenhouse Gas Reporting Rule (Reporting Rule). The
 15 Reporting Rule is a response to the fiscal year (FY) 2008 Consolidated Appropriations Act (H.R.
 16 2764; Public Law 110-161), which required EPA to develop “mandatory reporting of greenhouse
 17 gasses above appropriate thresholds in all sectors of the economy...” The Reporting Rule would
 18 apply to most entities that emit 25,000 metric tons of CO_{2e} or more per year. Starting in 2010,
 19 facility owners are required to submit an annual GHG emissions report with detailed calculations of

1 facility GHG emissions. The Reporting Rule also would mandate recordkeeping and administrative
2 requirements in order for EPA to verify annual GHG emissions reports.

3 **Environmental Protection Agency Endangerment and Cause or Contribute Findings** 4 **(2009)**

5 On December 7, 2009, EPA signed the Endangerment and Cause or Contribute Findings for
6 Greenhouse Gases under Section 202(a) of the CAA. Under the Endangerment Finding, EPA finds
7 that the current and projected concentrations of the six key well-mixed GHGs—CO₂, CH₄, N₂O, PFCs,
8 SF₆, and HFCs—in the atmosphere threaten the public health and welfare of current and future
9 generations. Under the Cause or Contribute Finding, EPA finds that the combined emissions of these
10 well-mixed GHGs from new motor vehicles and new motor vehicle engines contribute to the GHG
11 pollution that threatens public health and welfare. However, unlike some criteria pollutants and
12 TAC, GHG emissions do not directly impact human health. Rather, as stated in Section 22.1.3.1,
13 elevated GHG concentrations in excess of natural levels induce large-scale climate shifts, which can
14 expose individuals to increased public health risks. For example, increases in ambient temperature
15 can lead to heat-related illnesses and death, whereas changes in disease vectors may lead to
16 increased risk of infectious diseases. Climate change and air pollution are also closely coupled.
17 Ozone and particulate pollution, both of which can negatively impact human health, are strongly
18 influenced by weather and can be concentrated near Earth's surface during extreme heat events.

19 These findings do not themselves impose any requirements on industry or other entities. However,
20 this action is a prerequisite to finalizing EPA's proposed new corporate average fuel economy
21 standards for light-duty vehicles, which EPA proposed in a joint proposal including the Department
22 of Transportations proposed corporate average fuel-economy standards.

23 **Climate Change Considerations in Project-Level NEPA Analysis (2009)**

24 This document provides initial Forest Service guidance on how to consider climate change and GHG
25 emissions in project-level NEPA documents. While the guidance focuses on how Forest Service
26 management may influence climate change, the document describes scoping issues related to GHG
27 analyses and identifies models that can be used to quantify GHG emissions from Forest Service
28 projects. The guidance will be revised as more scientific literature is published, climate change
29 management experience is gained, and government policies are established.

30 **CEQs Draft NEPA Guidance on Consideration of the Effects of Climate Change and** 31 **Greenhouse Gas Emissions (2010 and 2014)**

32 On February 19, 2010, the Council on Environmental Quality (CEQ) issued draft National
33 Environmental Policy Act (NEPA) guidance on the consideration of the effects of climate change and
34 GHG emissions. This guidance advises federal agencies that they should consider opportunities to
35 reduce GHG emissions caused by federal actions, adapt their actions to climate change effects
36 throughout the NEPA process, and address these issues in their agency NEPA procedures. Where
37 applicable, the scope of the NEPA analysis should cover the GHG emissions effects of a proposed
38 action and alternative actions, as well as the relationship of climate change effects on a proposed
39 action or alternatives. The guidance identified a reference point of 25,000 metric tons per year of
40 direct CO₂e as an indicator that further NEPA review may be warranted. This reference point,
41 however, is not intended to be used as a threshold for determining a significant impact or effect on
42 the environment due to GHG emissions. (Council on Environmental Quality 2010).

1 The draft guidance was updated in 2014 to further refine the scope of NEPA analyses. The 2014
 2 guidance recommends that analyses should include the potential effects of a proposed action on
 3 climate change as indicated by its GHG emissions, as well as the implication of climate change for the
 4 environmental effects of the proposed action (Council on Environmental Quality 2014). The 2014
 5 CEQ guidance is still considered draft as of the writing of this document and is not an official CEQ
 6 policy document.

7 **Executive Order B-30-15, Brown (2015)**

8 EO B-30-15 established a medium-term goal for 2030 of reducing GHG emissions by 40 percent
 9 below 1990 levels and requires ARB to update its current AB32 Scoping Plan to identify the
 10 measures to meet the 2030 target. The executive order supports EO S-3-05, described above, but is
 11 only currently binding on state agencies. However, there are current (2015) proposals at the state
 12 legislature to adopt a legislative target for 2050 and to give the ARB the authority to adopt interim
 13 and long-term binding GHG targets.

14 **22.2.2 State Plans, Policies, and Regulations**

15 The following state regulations related to air quality may apply to implementation of some aspects
 16 of the BDCP water conveyance facility and the conservation measures. The regulations act as
 17 performance standards for engineers and construction contractors; their implementation is
 18 considered an environmental commitment of the agencies implementing the BDCP. This
 19 commitment is discussed further in Appendix 3B, *Environmental Commitments*.

20 **22.2.2.1 Criteria Pollutants**

21 **California Clean Air Act and California Ambient Air Quality Standards**

22 In 1988, the state legislature adopted the California Clean Air Act (CCAA), which established a
 23 statewide air pollution control program. CCAA requires all air districts in the state to endeavor to
 24 meet the CAAQS by the earliest practical date. Unlike the federal CAA, the CCAA does not set precise
 25 attainment deadlines. Instead, the CCAA establishes increasingly stringent requirements for areas
 26 that will require more time to achieve the standards. CAAQS are generally more stringent than the
 27 NAAQS and incorporate additional standards for SO₄, H₂S, and C₂H₃Cl, and visibility-reducing
 28 particles. The CAAQS and NAAQS are listed together in Table 22-5.

29 ARB and local air districts bear responsibility for achieving California's air quality standards, which
 30 are to be achieved through district-level air quality management plans that would be incorporated
 31 into the SIP. In California, EPA has delegated authority to prepare SIPs to ARB, which, in turn, has
 32 delegated that authority to individual air districts. ARB traditionally has established state air quality
 33 standards, maintaining oversight authority in air quality planning, developing programs for
 34 reducing emissions from motor vehicles, developing air emission inventories, collecting air quality
 35 and meteorological data, and approving SIPs.

36 The CCAA substantially adds to the authority and responsibilities of air districts. The CCAA
 37 designates air districts as lead air quality planning agencies, requires air districts to prepare air
 38 quality plans, and grants air districts authority to implement transportation control measures. The
 39 CCAA also emphasizes the control of "indirect and area-wide sources" of air pollutant emissions. The

1 CCAA gives local air pollution control districts explicit authority to regulate indirect sources of air
2 pollution and to establish traffic control measures (TCMs).

3 **Statewide Truck and Bus Regulation**

4 Originally adopted in 2005, the onroad truck and bus regulation requires heavy trucks to be
5 retrofitted with PM filters. The regulation applies to privately and federally owned diesel fueled
6 trucks with a gross vehicle weight rating (GWR) greater than 14,000 pounds. Compliance with the
7 regulation can be reached through one of two paths: 1) vehicle retrofits according to engine year or
8 2) phase-in schedule. Both compliance paths ensure that by January 2023, nearly all trucks and
9 buses will have 2010 model year engines or newer.

10 **State Tailpipe Emission Standards**

11 To reduce emissions from off-road diesel equipment, onroad diesel trucks, and harbor craft, ARB
12 established a series of increasingly strict emission standards for new engines. New construction
13 equipment used for the project, including heavy duty trucks, off-road construction equipment,
14 tugboats, and barges, will be required to comply with the standards.

15 **State Nitrogen Oxide Reduction Program**

16 The Carl Moyer Memorial Air Quality Standards Attainment Program (Carl Moyer Program) is a
17 voluntary program that offers grants to owners of heavy-duty vehicles and equipment. The program
18 is a partnership between ARB and the local air districts throughout the state to reduce air pollution
19 emissions from heavy-duty engines. Locally, the air districts administer the Carl Moyer Program.

20 **22.2.2.2 Toxic Air Containments**

21 California regulates TACs primarily through the Tanner Air Toxics Act (AB 1807) and the Air Toxics
22 Hot Spots Information and Assessment Act of 1987 (AB 2588). In the early 1980s, the ARB
23 established a statewide comprehensive air toxics program to reduce exposure to air toxics. The
24 Toxic Air Contaminant Identification and Control Act (AB 1807) created California's program to
25 reduce exposure to air toxics. The Air Toxics "Hot Spots" Information and Assessment Act (AB 2588)
26 supplements the AB 1807 program by requiring a statewide air toxics inventory, notification of
27 people exposed to a significant health threat, and facility plans to reduce these hazards.

28 In September 2000, the ARB approved a comprehensive diesel risk reduction plan to reduce
29 emissions from both new and existing diesel-fueled engines and vehicles (California Air Resources
30 Board 2000). The goal of the plan was to reduce diesel PM10 (respirable particulate matter)
31 emissions and the associated health threat by 75% in 2010 and by 85% by 2020. The plan identifies
32 14 measures that target new and existing onroad vehicles (e.g., heavy-duty trucks and buses), off-
33 road equipment (e.g., graders, tractors, forklifts, sweepers, and boats), portable equipment (e.g.,
34 pumps), and stationary engines (e.g., stand-by power generators). ARB will implement the plan over
35 the next several years. The Tanner Act sets forth a formal procedure for the ARB to designate
36 substances as TACs. This includes research, public participation, and scientific peer review before
37 the ARB designates a substance as a TAC. To date, the ARB has identified 21 TACs, and has also
38 adopted the EPA's list of HAPs as TACs. In August 1998, DPM was added to the ARB list of TACs
39 (California Air Resources Board 1998).

1 The Hot Spots Act requires that existing facilities that emit toxic substances above specified levels
2 complete the following.

- 3 • Prepare a toxic emission inventory.
- 4 • Prepare a risk assessment if emissions are significant (i.e., 10 tons per year or on District's
5 Health Risk Assessment [HRA] list).
- 6 • Notify the public of significant risk levels.
- 7 • Prepare and implement risk reduction measures.

8 The ARB has adopted several regulations that will reduce diesel emissions from in-use vehicles and
9 engines throughout California. For example, ARB adopted an idling regulation for onroad diesel-
10 fueled commercial vehicles in July 2004 and updated in October 2005. The regulation applies to
11 public and privately owned trucks with a GWR greater than 10,000 pounds. Vehicles subject to the
12 regulation are prohibited from idling for more than 5 minutes in any one location. ARB also adopted
13 a regulation for diesel-powered construction and mining vehicles operating. Fleet owners are
14 subject to retrofit or accelerated replacement/repower requirements for which ARB must obtain
15 authorization from EPA prior to enforcement. The regulation also imposes a five minute idling
16 limitation on owners, operators, and renters or lessees of off-road diesel vehicles. In some cases, the
17 particulate matter reduction strategies also reduce smog-forming emissions such as NO_x. As an
18 ongoing process, the ARB reviews air contaminants and identifies those that are classified as TACs.
19 The ARB also continues to establish new programs and regulations for the control of TACs, including
20 DPMs, as appropriate.

21 **22.2.2.3 Greenhouse Gases**

22 **Executive Order S-3-05 (2005)**

23 Signed by Governor Arnold Schwarzenegger on June 1, 2005, Executive Order S-3-05 asserts that
24 California is vulnerable to the effects of climate change. To combat this concern, Executive Order S-
25 3-05 established the following GHG emissions reduction targets for state agencies.

- 26 • By 2010, reduce GHG emissions to 2000 levels.
- 27 • By 2020, reduce GHG emissions to 1990 levels.
- 28 • By 2050, reduce GHG emissions to 80% below 1990 levels.

29 Executive orders are binding only on state agencies. Accordingly, EO S-03-05 will guide state
30 agencies' efforts to control and regulate GHG emissions but will have no direct binding effect on local
31 government or private actions. The Secretary of the California Environmental Protection Agency
32 (CalEPA) is required to report to the Governor and state legislature biannually on the impacts of
33 global warming on California, mitigation and adaptation plans, and progress made toward reducing
34 GHG emissions to meet the targets established in this executive order.

35 **Senate Bills 1078/107/2 and Executive Order S-14-08—Renewables Portfolio 36 Standard (2002, 2006,2011)**

37 Senate Bills (SB) 1078 and 107, California's Renewables Portfolio Standard (RPS), obligates
38 investor-owned utilities (IOUs), energy service providers (ESPs), and Community Choice
39 Aggregations (CCAs) to procure an additional 1% of retail sales per year from eligible renewable

1 sources until 20% is reached, no later than 2010. The California Public Utilities Commission (CPUC)
 2 and California Energy Commission (CEC) are jointly responsible for implementing the program. EO
 3 S-14-08 set forth a longer range target of procuring 33% of retail sales by 2020. SB 2 (2011)
 4 requires a RPS of 33% by 2020.

5 **Assembly Bill 1493—Pavley Rules (2002, Amendments 2009)**

6 Known as “Pavley I,” AB 1493 standards are the nation’s first GHG standards for automobiles. AB
 7 1493 requires the ARB to adopt vehicle standards that will lower GHG emissions from new light
 8 duty autos to the maximum extent feasible beginning in 2009. Additional strengthening of the
 9 Pavley standards (referred to previously as “Pavley II”, now referred to as the “Advanced Clean
 10 Cars” measure) has been proposed for vehicle model years 2017–2020. Together, the two standards
 11 are expected to increase average fuel economy to roughly 43 miles per gallon by 2020 and reduce
 12 GHG emissions from the transportation sector in California by approximately 14%. In June 2009, the
 13 EPA granted California’s waiver request enabling the state to enforce its GHG emissions standards
 14 for new motor vehicles beginning with the current model year.

15 The EPA and ARB are currently working together to on a joint rulemaking to establish GHG
 16 emissions standards for 2017 to 2025 model-year passenger vehicles. The Interim Joint Technical
 17 Assessment Report for the standards evaluated four potential future standards ranging from 47 and
 18 62 miles per gallon in 2025. The EPA and ARB were still working on this proposal as of February
 19 2012.

20 **Assembly Bill 32, California Global Warming Solutions Act (2006)**

21 In September 2006, the California State Legislature adopted Assembly Bill 32, the California Global
 22 Warming Solutions Act of 2006 (AB 32). AB 32 establishes a cap on statewide GHG emissions and
 23 sets forth the regulatory framework to achieve the corresponding reduction in statewide emission
 24 levels. Under AB 32, ARB is required to take the following actions.

- 25 • Adopt early action measures to reduce GHGs.
- 26 • Establish a statewide GHG emissions cap for 2020 based on 1990 emissions.
- 27 • Adopt mandatory reporting rules for significant GHG sources.
- 28 • Adopt a scoping plan indicating how emission reductions would be achieved through
 29 regulations, market mechanisms, and other actions.
- 30 • Adopt regulations needed to achieve the maximum technologically feasible and cost-effective
 31 reductions in GHGs.

32 **Executive Order S-01-07, Low Carbon Fuel Standard (2007)**

33 Executive Order S-01-07 mandates: (1) that a statewide goal be established to reduce the carbon
 34 intensity of California’s transportation fuels by at least 10% by 2020, and (2) that a low carbon fuel
 35 standard (LCFS) for transportation fuels be established in California. The executive order initiates a
 36 research and regulatory process at ARB. Based on an implementation plan developed by CEC, ARB
 37 will be responsible for implementing the LCFS. On December 29, 2011, a federal judge issued a
 38 preliminary injunction blocking enforcement of the LCFS, ruling that the LCFS violates the interstate
 39 commerce clause (Georgetown Climate Center 2012). CARB has appealed this ruling.

1 **Executive Order S-13-08, Adaptation to Climate Change (2008)**

2 Executive Order S-13-08, issued November 14, 2008 directs the California Natural Resources
3 Agency, Department of Water Resources, Office of Planning and Research, Energy Commission, State
4 Water Resources Control Board, State Parks Department, and California's coastal management
5 agencies to participate in a number of planning and research activities to advance California's ability
6 to adapt to the impacts of climate change. The order specifically directs agencies to work with the
7 National Academy of Sciences to initiate the first California Sea Level Rise Assessment and to review
8 and update the assessment every two years after completion; immediately assess the vulnerability
9 of the California transportation system to sea level rise; and to develop a California Climate Change
10 Adaptation Strategy.

11 **Climate Change Scoping Plan (2008)**

12 On December 11, 2008, pursuant to AB 32, ARB adopted the Climate Change Scoping Plan. This plan
13 outlines how emissions reductions from significant sources of GHGs will be achieved via regulations,
14 market mechanisms, and other actions. Six key elements are identified to achieve emissions
15 reduction targets.

- 16 • Expanding and strengthening existing energy efficiency programs as well as building and
17 appliance standards.
- 18 • Achieving a statewide renewable energy mix of 33%.
- 19 • Developing a California cap-and-trade program that links with other Western Climate Initiative
20 partner programs to create a regional market system.
- 21 • Establishing targets for transportation-related GHG emissions for regions throughout California,
22 and pursuing policies and incentives to achieve those targets.
- 23 • Adopting and implementing measures pursuant to existing state laws and policies, including
24 California's clean car standards, goods movement measures, and the Low Carbon Fuel Standard.
- 25 • Creating targeted fees, including a public goods charge on water use, fees on high global
26 warming potential gases, and a fee to fund the administrative costs of the state's long-term
27 commitment to AB 32 implementation.

28 The Climate Change Scoping Plan also describes recommended measures that were developed to
29 reduce GHG emissions from key sources and activities while improving public health, promoting a
30 cleaner environment, preserving our natural resources, and ensuring that the impacts of the
31 reductions are equitable and do not disproportionately affect low-income and minority communities.
32 These measures put the state on a path to meet the long-term 2050 goal of reducing California's GHG
33 emissions to 80% below 1990 levels.

34 In March 2011, a San Francisco Superior Court enjoined the implementation of ARB's Scoping Plan,
35 finding the alternatives analysis and public review process violated both CEQA and ARB's certified
36 regulatory program (*Association of Irrigated Residents, et al v. California Air Resources Board*). In
37 response to this litigation, the ARB adopted a *Final Supplement to the AB 32 Scoping Plan Functional*
38 *Equivalent Document* on August 24, 2011. ARB staff re-evaluated the statewide GHG baseline in light
39 of the economic downturn and updated the projected 2020 emissions to 507 million metric tons
40 CO₂e. Two reduction measures (Pavley I and the Renewable Portfolio Standard) not previously
41 included in the 2008 Scoping Plan baseline were incorporated into the updated baseline. According

1 to the *Final Supplement*, the majority of additional measures in the Climate Change Scoping Plan
2 have been adopted (as of 2012) and are currently in place (California Air Resources Board 2011a).

3 **California Climate Change Adaptation Strategy (2009)**

4 In cooperation and partnership with multiple state agencies, the 2009 California Climate Adaptation
5 Strategy summarizes the best known science on climate change impacts in seven specific sectors
6 (public health, biodiversity and habitat, ocean and coastal resources, water management,
7 agriculture, forestry, and transportation and energy infrastructure) and provides recommendations
8 on how to manage against those hazards. The California Natural Resources Agency is currently in
9 the process of updating the 2009 strategy for 2012.

10 **State CEQA Guidelines**

11 As revised pursuant to Senate Bill 97 adopted in 2007 (Cal PRC § 21083.05), the State CEQA
12 Guidelines, effective in mid-2010, require lead agencies to describe, calculate, or estimate the
13 amount of GHG emissions that would result from a project. Moreover, the State CEQA Guidelines
14 emphasize the necessity to determine potential climate change effects of the project and propose
15 mitigation as necessary. The State CEQA Guidelines confirm the discretion of lead agencies to
16 determine appropriate significance thresholds, but require the preparation of an S) if “there is
17 substantial evidence that the possible effects of a particular project are still cumulatively
18 considerable notwithstanding compliance with adopted regulations or requirements” (Section
19 15064.4).

20 State CEQA Guidelines section 15126.4 includes considerations for lead agencies related to feasible
21 mitigation measures to reduce GHG emissions, which may include, among others, measures in an
22 existing plan or mitigation program for the reduction of emissions that are required as part of the
23 lead agency’s decision; implementation of project features, project design, or other measures which
24 are incorporated into the project to substantially reduce energy consumption or GHG emissions;
25 offsite measures, including offsets that are not otherwise required, to mitigate a project’s emissions;
26 and, measures that sequester carbon or carbon-equivalent emissions.

27 **Greenhouse Gas Cap-and-Trade Program**

28 On October 20, 2011, ARB adopted the final cap-and-trade program for California. The California
29 cap-and-trade program will create a market-based system with an overall emissions limit for
30 affected sectors. Examples of affected entities include carbon dioxide suppliers, electricity- in-state
31 generators, hydrogen production, petroleum refining, and other large-scale manufacturers and/or
32 fuel suppliers. Neither DWR nor the BDCP are considered covered entities (pursuant to the cap-and-
33 trade regulation) and are therefore not subject to the GHG compliance obligations. However, the
34 program would contribute to emissions reductions in other sectors that could indirectly affect the
35 GHG emission intensity associated with the project (e.g., electricity). The cap-and-trade program is
36 currently proposed to regulate more than 85% of California’s emissions and will stagger compliance
37 requirements according to the following schedule: (1) electricity generation and large industrial
38 sources (2012); (2) fuel combustion and transportation (2015).

1 **Technical Advisory Information**

2 This section summarizes two technical advisories on CEQA and climate change. The documents are
3 provided for informational purposes only; certain sections of the below guidance may be
4 superseded by more recent regulations (e.g., SB 97).

5 **Office of Planning and Research Advisory on CEQA and Climate Change**

6 In June 2008, the Office of Planning and Research (OPR) Advisory published a technical advisory
7 entitled “CEQA and Climate Change: Addressing Climate Change through CEQA” (OPR Advisory).
8 This guidance, which is purely advisory, proposes a three-step analysis of GHG emissions. The
9 advice, moreover, is not the most recent expression of state policy on the subject, as it preceded in
10 time the enactment in 2010 of modifications to the CEQA Guidelines addressing how to deal with
11 greenhouse gas emissions in CEQA documents.

- 12 1. **Mandatory Quantification of GHG Project Emissions.** The environmental impact analysis must
13 include quantitative estimates of a project’s GHG emissions from different types of air emission
14 sources. These estimates should include both construction-phase emissions, as well as
15 completed operational emissions, using one of a variety of available modeling tools.³
- 16 2. **Continued Uncertainty Regarding “Significance” of Project-Specific GHG Emissions.** Each EIR
17 document should assess the significance of the project’s impacts on climate change. The OPR
18 Advisory recognizes uncertainty regarding what GHG impacts should be determined to be
19 significant and encourages agencies to rely on the evolving guidance being developed in this
20 area. According to the OPR Advisory, the environmental analysis should describe a “baseline” of
21 existing (pre-project) environmental conditions and then add project GHG emissions on to this
22 baseline to evaluate if impacts are significant.
- 23 3. **Mitigation Measures.** According to the OPR Advisory, “all feasible” mitigation measures or
24 project alternatives should be adopted if an impact is significant (feasibility is defined in relation
25 to scientific, technical, and economic factors). If mitigation measures cannot sufficiently reduce
26 project impacts, the agency should adopt those measures that are feasible and include a fact-
27 based explanation in the EIR of why additional mitigation is not feasible. OPR also identifies a
28 menu of GHG emission mitigation measures, ranging from balanced “mixed use” master-planned
29 project designs to construction equipment and material selection criteria and practices. Not all
30 of those mitigation measures apply in every situation.

31 **22.2.2.4 Environmental Justice Compliance and Enforcement Working** 32 **Group**

33 The California Environmental Protection Agency created the Environmental Justice Compliance and
34 Enforcement Working Group in 2013. The working group coordinates compliance and enforcement
35 of state environmental laws in California communities that are most affected by pollution. Members
36 include the enforcement chiefs from CalEPA, the Department of Toxic Substances Control, the

³ Note that CEQA Guidelines section 15064.4 supersedes OPR’s 2008 advice on the issue of quantification. Section 15064.4 provides that a lead agency has the discretion to determine, in the context of a particular project, whether to use a model or methodology to quantify greenhouse gas emissions or to rely on a qualitative analysis or performance based standards.

1 Department of Pesticide Regulation, CalRecycle, the Air Resources Board and the State Water
 2 Resources Control Board, as well as a representative from the Office of Environmental Health
 3 Hazard Assessment.

4 **22.2.3 Regional and Local Plans, Policies, and Regulations**

5 At the local level, responsibilities of air quality districts include overseeing stationary-source
 6 emissions, approving permits, maintaining emissions inventories, maintaining air quality stations,
 7 overseeing agricultural burning permits, and reviewing air quality-related sections of
 8 environmental documents required by CEQA. The air quality districts are also responsible for
 9 establishing and enforcing local air quality rules and regulations that address the requirements of
 10 federal and state air quality laws and for ensuring that NAAQS and CAAQS are met.

11 ARB’s Climate Change Scoping Plan states that local governments are “essential partners” in the
 12 effort to reduce GHG emissions. The Climate Change Scoping Plan also acknowledges that local
 13 governments have “broad influence and, in some cases, exclusive jurisdiction” over activities that
 14 contribute to significant direct and indirect GHG emissions through their planning and permitting
 15 processes, local ordinances, outreach and education efforts, and municipal operations. Many of the
 16 proposed measures to reduce GHG emissions rely on local government actions. The Climate Change
 17 Scoping Plan encourages local governments to reduce GHG emissions by approximately 15% from
 18 current levels by 2020.

19 The air quality study area falls under the jurisdiction of four air districts: Yolo-Solano Air Quality
 20 Management District (YSAQMD), Sacramento Metropolitan Air Quality Management District
 21 (SMAQMD), Bay Area Air Quality Management District (BAAQMD), and San Joaquin Valley Air
 22 Pollution Control District (SJVAPCD). The following local policies related to air quality may apply to
 23 implementation of some aspects of the BDCP water conveyance facility and the conservation
 24 measures. The regulations act as performance standards for engineers and construction contractors;
 25 their implementation is considered an environmental commitment of the agencies implementing the
 26 BDCP. This commitment is discussed further in Appendix 3B, *Environmental Commitments*.

27 **22.2.3.1 Criteria Pollutants**

28 **Yolo-Solano Air Quality Management District**

29 YSAQMD has local air quality jurisdiction over the action components located in Yolo County.
 30 YSAQMD has adopted CEQA emission thresholds in the *Handbook for Assessing and Mitigating Air*
 31 *Quality Impacts* (Yolo-Solano Air Quality Management District 2007) to assist lead agencies in
 32 determining the level of significance of project-related emissions. According to the YSAQMD
 33 handbook, emissions that exceed the recommended threshold levels are considered potentially
 34 significant and should be mitigated where feasible.

35 Under the CCAA, YSAQMD is required to develop an air quality plan for nonattainment criteria
 36 pollutants in the air district. The 1994 Sacramento Area Regional Ozone Attainment Plan was
 37 prepared to address VOC and NO_x emissions following the region’s serious nonattainment
 38 designation for the 1-hour ozone NAAQS in November 1991. The Sacramento Regional 8-Hour
 39 Attainment and Reasonable Further Progress Plan has also been adopted to address the region’s
 40 nonattainment status for the 8-hour ozone NAAQS. Air districts within the Sacramento Federal
 41 Nonattainment Area (SFNA) have submitted the ozone plan to the EPA and are currently waiting for

1 the agency to approve the document. Counties in the SFNA (Sacramento, Yolo, Placer, El Dorado,
2 Solano, Sutter, and Butte) have also adopted the Northern Sacramento Valley Planning Area 2009
3 Triennial Air Quality Attainment Plan (2009 Plan) (Sacramento Valley Air Quality Engineering and
4 Enforcement Professionals 2010). This plan outlines strategies to achieve the health-based ozone
5 standard. The Sacramento region is also in the process of developing a plan to address PM.

6 All activities located in Yolo County are subject to the YSAQMD regulations in effect at the time of
7 construction. Specific regulations applicable to the alternatives may involve diesel construction
8 equipment emissions, fugitive dust, onroad haul truck emissions, and general permit requirements.
9 Below are descriptions of YSAQMD rules that may apply to the project. This list of rules may not be
10 all encompassing as additional YSAQMD rules may apply to the alternatives as specific components
11 are identified.

- 12 ● Rule 2.5 (Nuisance). This rule prevents dust emissions from creating a nuisance to surrounding
13 properties.
- 14 ● Rule 2.11 (Particulate Matter Concentration). This rule restricts emissions of PM greater than
15 0.1 grain per cubic foot of gas at dry standard conditions.
- 16 ● Rule 2.28 (Cutback and Emulsified Asphalts). This rule limits the application of cutback and
17 emulsified asphalt.
- 18 ● Rule 2.32 (Stationary Internal Combustion Engines). This rule requires portable equipment
19 greater than 50 horsepower, other than vehicles, to be registered with either ARB Portable
20 Equipment Registration Program (PERP) or with YSAQMD.

21 **Sacramento Metropolitan Air Quality Management District**

22 SMAQMD has local air quality jurisdiction over the action components located in Sacramento
23 County. Similar to YSAQMD, SMAQMD has adopted the 1994 Sacramento Area Regional Ozone
24 Attainment Plan, Sacramento Regional 8-Hour Attainment and Reasonable Further Progress Plan
25 (currently under revision), the 2009 Plan, and advisory CEQA emission thresholds to assist CEQA
26 lead agencies in determining the level of significance of project-related emissions (Sacramento
27 Metropolitan Air Quality Management District 2014). SMAQMD's recommended CEQA thresholds
28 are outlined in its *Guide to Air Quality Assessment in Sacramento County*. The air district also has
29 established rules and regulations, of which the following may apply to the alternatives. This list of
30 rules may not be all encompassing as additional SMAQMD rules may apply to the alternatives as
31 specific components are identified.

- 32 ● Rule 2020 (Nuisance). This rule prevents criteria pollutants from creating a nuisance to
33 surrounding properties.
- 34 ● Rule 403 (Fugitive Dust). This rule controls fugitive dust emissions through implementation of
35 BMPs.
- 36 ● Rule 404 (Particulate Matter). This rule restricts emissions of PM greater than 0.23 grams per
37 cubic meter.
- 38 ● Rule 412 (Stationary Internal Combustion Engines). This rule controls emissions of NO_x, CO, and
39 non-methane hydrocarbons from stationary internal combustion engines greater than 50 brake
40 horsepower.

- Rule 453 (Cutback and Emulsified Asphalt Paving). This rule limits the application of cutback and emulsified asphalt.

SMAQMD requires development projects implement all feasible mitigation measures to reduce potential impacts to air quality. If traditional, onsite mitigation (e.g., engine retrofits) are not sufficient to reduce adverse impacts, DWR may contribute to SMAQMD's Heavy-Duty Low-Emission Vehicle Incentive Programs (HDLEVIP), which include the Carl Moyer and Sacramento Emergency Clean Air Transportation (SECAT) Programs. The HDLEVIP and associated incentive programs are managed and implemented by the SMAQMD on behalf of all air districts within the SFNA (e.g., YSAQMD, Feather River Air Quality Management District, Placer County Air Pollution Control District). More than \$7 million are awarded annually to emissions reduction projects through the HDLEVIP.

The HDLEVIP and associated incentive programs are a means of generating revenue to fund projects and programs capable of achieving emissions reductions. The Carl Moyer program is designed to reduce ROG, NO_x, and PM from on- and offroad sources, whereas the SECAT program primarily targets NO_x from heavy-duty onroad trucks. The payment fee for the Carl Moyer Program is currently \$17,720 per ton, in addition to a 5% administration fee. Project applicants relying on the Carl Moyer Program to reduce adverse air quality impacts must 1) calculate the offsite mitigation fee required to reduce project-level emissions to below applicable thresholds, and 2) include the mitigation fee in the environmental document, project approval conditions, and in the MMRP. Fees collected by the SMAQMD are used to fund reduction projects within the SFNA. Example projects funded through the Carl Moyer Program include the following.

- Independent Construction Caterpillar 633D Scraper Tier 2 Engine Repower
- Kiewit Pacific Construction Caterpillar 16G Grader Diesel Catalyst Retrofit
- Commercial Low-Emission Propane Generator
- American Engineering & Asphalt Caterpillar 825C Compactor Tier 2 Engine Repower
- B&D Geerts Construction Caterpillar 826C Compactor Tier 1 Engine Repower

The SECAT program differs from the Carl Moyer Program in that it can only fund projects for on-road vehicles. However, the SECAT program can also finance operational emissions reductions, including facility modifications and out-of-cycle replacements; the Carl Moyer Program is only available to fund the incremental capital costs of control measures.

Bay Area Air Quality Management District

BAAQMD has local air quality jurisdiction over the action components located in Contra Costa and Alameda Counties. Like YSAPCD and SMAQMD, the BAAQMD (2011) has adopted advisory emission thresholds to assist CEQA lead agencies in determining the level of significance of a project's emissions, which are outlined in its *California Environmental Quality Act Air Quality Guidelines*. BAAQMD has also adopted air quality plans to improve air quality, protect public health, and protect the climate. The Bay Area 2001 Ozone Attainment Plan was adopted to reduce ozone and achieve the NAAQS ozone standard. BAAQMD also adopted a resignation plan for CO in 1994. The resignation plan includes strategies to ensure the continuing attainment of the NAAQS for CO in the SFBAAB.

The BAAQMD also supports incentive programs to reduce criteria pollutant emissions within the district. Similar to SMAQMD, the BAAQMD's Carl Moyer Program funds control projects for offroad

1 and onroad emission sources. The Transportation Fund for Clean Air (TFCA) Program likewise
2 provides financial incentives for onroad vehicle retrofits.

3 The alternatives may be subject to the following district rules. This list of rules may not be all
4 encompassing as additional BAAQMD rules may apply to the alternatives as specific components are
5 identified.

- 6 • Regulation 2, Rule 5 (New Source Review of Toxic Air Contaminates). This regulation outlines
7 guidance for evaluating TAC emissions and their potential health hazards.
- 8 • Regulation 6, Rule 1 (Particulate Matter). This regulation restricts emissions of PM darker than
9 No. 1 on the Ringlemann Chart to less than 3 minutes in any 1 hour.
- 10 • Regulation 8, Rule 15 (Emulsified and Liquid Asphalts). This regulation limits emissions of VOCs
11 caused by paving materials.
- 12 • Regulation 9, Rule 8 (Stationary Internal Combustion Engines). This regulation limits emissions
13 of NO_x and CO from stationary internal combustion engines of more than 50 horsepower.

14 **San Joaquin Valley Air Pollution Control District**

15 SJVAPCD has local air quality jurisdiction over the action components located in San Joaquin,
16 Stanislaus, and Merced Counties. SJVAPCD's recommended CEQA thresholds are outlined in its *Guide*
17 *for Assessing and Mitigating Air Quality Impacts*.⁴ Pursuant to the CCAA, SJVAPCD has adopted
18 attainment plans to address ozone, PM, and CO. The 2007 Ozone Plan contains a comprehensive list
19 of regulatory and incentive-based measures to reduce VOC and NO_x emissions within the SJVAB. In
20 particular, plan purposes a 75% reduction in NO_x and 25% reduction in VOC by 2023. SJVAPCD's
21 2007 PM₁₀ Maintenance Plan and 2008 PM_{2.5} Plan likewise include strategies to reduce PM
22 emissions throughout the air basin. Finally, the 2004 California State Implementation Plan for
23 Carbon Monoxide addresses CO emissions throughout the state.

24 The alternatives may be subject to the following district rules. This list of rules may not be all
25 encompassing, as additional SJVAPCD rules may apply to the alternatives as specific components are
26 identified. These are rules that have been adopted by SJVAPCD to reduce emissions throughout the
27 San Joaquin Valley.

- 28 • Rule 2201 (New and Modified Stationary-Source Review Rule). This rule applies to all new
29 stationary sources and all modifications to existing stationary sources subject to SJVAPCD
30 permit requirements that, after construction, emit or may emit one or more pollutants regulated
31 by the rule.
- 32 • Rule 3135 (Dust Control Plan Fees). This rule requires the applicant to submit a fee in addition
33 to a dust control plan. The purpose of this rule is to recover SJVAPCD's cost for reviewing these
34 plans and conducting compliance inspections.

⁴ SJVAPCD adopted their 2015 GAMAQI on March 19, 2015. Conversation with SJVAPCD staff indicates the SJVAPCD is not requiring the use of their updated 2015 GAMAQI for projects initiated prior to the adoption of the 2015 GAMAQI (Siong Pers. Comm. 2015). Accordingly, this EIR/EIS relies on guidance outlined in the 2002 GAMAQI.

- 1 • Rule 4101 (Visible Emissions). This rule prohibits emissions of visible air contaminants to the
2 atmosphere and applies to any source operation that emits or may emit air contaminants.
- 3 • Rule 4102 (Nuisance). This rule applies to any source operation that emits or may emit air
4 contaminants or other materials. In the event that the project or construction of the project
5 creates a public nuisance, it could be in violation and subject to SJVAPCD enforcement action.
- 6 • Rule 4641 (Cutback, Slow-Cure, and Emulsified Asphalt, Paving, and Maintenance Operations).
7 This rule applies to the manufacture and use of cutback asphalt, slow-cure asphalt, and
8 emulsified asphalt for paving and maintenance operations.
- 9 • Rule 4701 (Internal Combustion Engines—Phase 1). This rule limits the emissions of NO_x, CO,
10 and VOC from internal combustion engines. These limits are not applicable to standby engines
11 as long as they are used fewer than 200 hours per year (e.g., for testing during non-
12 emergencies).
- 13 • Rule 4702 (Internal Combustion Engines—Phase 2). This rule limits the emissions of NO_x, CO,
14 and VOC from spark-ignited internal combustion engines.
- 15 • Regulation VIII (Fugitive PM₁₀ Prohibitions). This is a series of rules (Rules 8011–8081)
16 designed to reduce PM₁₀ emissions (predominantly dust/dirt) generated by human activity,
17 including construction, road construction, bulk materials storage, landfill operations, and other
18 activities.

19 Similar to SMAQMD, SJVAPCD has developed an offsite mitigation program to reduce ROG and NO_x
20 emissions in the SJVAB. SJVAPCD's Voluntary Emission Reduction Agreement (VERA) is
21 implemented through District Incentive Programs and is a measure to reduce project impacts under
22 CEQA. The District Incentive Programs fund grants and projects to achieve emissions reductions in
23 the SJVAB. The SJVAPCD has operated the program since 1992, resulting in considerable criteria
24 pollutant reductions throughout the region. Project applicants relying on the VERA to reduce
25 adverse air quality impacts must 1) calculate the offsite mitigation fee required to reduce project-
26 level emissions to below applicable thresholds, and 2) include the mitigation fee in the
27 environmental document, project approval conditions, and in the MMRP. Example programs funded
28 through the VERA include the following.

- 29 • On-Road Truck Voucher Program
- 30 • Burn Clean Program
- 31 • Heavy Duty Engine Program
- 32 • Cordless Zero-Emission Commercial Lawn & Garden Equipment Demonstration Program
- 33 • Statewide School Bus Retrofit Program

22.2.3.2 Greenhouse Gases

Yolo-Solano Air Quality Management District and Sacramento Metropolitan Air Quality Management District

YSAQMD and SMAQMD, along with and a committee of air districts in the Sacramento Region,⁵ are developing regional thresholds for evaluating GHG emissions from new stationary source and land development projects. Once fully constructed, the project will not be a land use development or stationary source project. As such, the Sacramento Regional GHG guidance does not directly apply to the proposed project; however, it is described below for context and reference.

While SMAQMD formally adopted the GHG thresholds in November 2014, they are still considered draft in YSAQMD.⁶ The GHG thresholds include project categories and emission levels. Construction activities would result in a significant and unavoidable cumulative impact if emissions exceed 1,100 metric tons CO₂e per year. Projects with emissions exceeding the operational threshold must mitigate to 1,100 metric tons CO₂e or demonstrate a 21.7% reduction from a projected no action taken (NAT) scenario to show consistency with AB 32 reduction goals.

Bay Area Air Quality Management District

BAAQMD has adopted recommended significance thresholds for operational GHG emissions from land-use development and stationary source projects. These thresholds are intended to reduce GHG emissions from major contributors within the air district. BAAQMD currently does not recommend a GHG emissions threshold for construction, but encourages the implementation of BMPs (Bay Area Air Quality Management District 2011).

San Joaquin Valley Air Pollution Control District

SVJAPCD's GHG guidance is intended to streamline CEQA review by pre-quantifying emissions reductions that would be achieved through the implementation of best performance standards (BPS). Projects are considered to have a less-than-significant cumulative impact on climate change if any of the following conditions are met.

1. Comply with an approved GHG reduction plan.
4. Achieve a score of at least 29⁷ using any combination of approved operational BPS.
5. Reduce operational GHG emissions by at least 29% over business-as usual conditions (demonstrated quantitatively).

⁵ Air districts in the region include SMAQMD, YSAQMD, El Dorado County Air Quality Management District, Feather River Air Quality Management District, and the Placer County Air Pollution Control District.

⁶ The YSAQMD current CEQA Guidelines recommend that lead agencies include at least a qualitative discussion of potential climate change impacts in the air quality analyses of sizable projects. YSAQMD further advises that the lead agency can require mitigation measures such as building code restrictions, increased public transportation, alternative fuels, or other actions that reduce CO₂ (Yolo Solano Air Quality Management District 2007).

⁷ A score of 29 represents a 29% reduction in GHG emissions relative to unmitigated conditions (1 point = 1%). This goal is consistent with the reduction targets established by AB 32.

1 SJVAPCD guidance recommends quantification of GHG emissions for all projects in which an EIR is
 2 required, regardless of whether BPS achieve a score of 29 (San Joaquin Valley Air Pollution Control
 3 District 2009).

4 **22.3 Environmental Consequences**

5 **22.3.1 Methods for Analysis**

6 The effects of the alternatives on air quality, criteria pollutants, and GHG emissions from
 7 construction and operations were assessed and quantified using standard and accepted software
 8 tools, techniques, and emission factors. A full list of assumptions used to quantify criteria pollutant
 9 and GHG emissions can be found in Appendices 22A, *Air Quality Analysis Methodology*, and 22B, *Air*
 10 *Quality Assumptions*.

11 **22.3.1.1 Construction of the Water Conveyance Facility**

12 **Mass Emissions Modeling**

13 Construction of the water conveyance facility (CM1) would generate emissions of criteria pollutants
 14 (ROG, NO_x, CO, PM₁₀, PM_{2.5}), and GHGs (CO₂, CH₄, N₂O, SF₆, and HFCs) that would result in short-
 15 term effects on ambient air quality in the air quality study area. Emissions would originate from off-
 16 road equipment exhaust, marine vessel exhaust, tunneling locomotive exhaust, employee and haul
 17 truck vehicle exhaust, helicopter exhaust, site grading and earth movement, paving, electrical
 18 transmission, and concrete batching. These emissions would be temporary (i.e., limited to the
 19 construction period) and would cease when construction activities are completed.

20 Emissions estimates were based on a combination of project sponsor input and model defaults, as
 21 described below. Modeling includes implementation of environmental commitments described in
 22 Appendix 3B, *Environmental Commitments*, Sections 3B.5.3 and 3B.5.12.

- 23 • **Off-Road Equipment:** Emission factors for diesel-powered off-road construction equipment
 24 (e.g., loaders, graders, bulldozers) were obtained from the CalEEMod (version 2013.2.2) User's
 25 Guide appendix, which provides values per unit of activity (in grams per horsepower-hour) by
 26 calendar year (ENVIRON 2013). Default equipment emission factors for gasoline-powered
 27 equipment were obtained from the ARB's OFFROAD2011 model. Criteria pollutant and GHG
 28 emissions from off-road equipment were estimated by multiplying the CalEEMod and OFFROAD
 29 emission factors by the equipment inventory provided by DWR. Please refer to Appendix 22A,
 30 *Air Quality Analysis* and Appendix 22B, *Air Quality Assumptions*, for additional detail and
 31 assumptions.
- 32 • **Marine Vessels:** Criteria pollutant emissions for marine vessels were quantified based on the
 33 ARB's (2012a) *Emissions Estimation Methodology for Commercial Harbor Craft Operating in*
 34 *California* and activity data provided by DWR. GHG emissions were estimated using the DWR
 35 activity data and emission factors obtained from the EPA (2009). Please refer to Appendices
 36 22A, *Air Quality Analysis Methodology*, and 22B, *Air Quality Assumptions*, for a catalog of marine
 37 vessels.
- 38 • **Tunneling Locomotives:** Emissions from diesel-powered locomotives were quantified using
 39 the ARB's (2010) off-road diesel engine emission standards. All locomotives were assumed to

1 utilize a 150 horsepower engine. Please refer to Appendices 22A, *Air Quality Analysis*
 2 *Methodology*, and 22B, *Air Quality Assumptions*, for locomotive operating hours.

- 3 • **Helicopters:** Helicopters would be used during line stringing activities for the 115/230 kV
 4 transmission lines. Two light-duty helicopters were assumed to operate four hours a day to
 5 install new poles and lines. Helicopter emissions were estimated using emission factors from the
 6 Federal Aviation Administration's (FAA) Emissions and Dispersion Modeling System (EDMS),
 7 version 5.1.4. Please refer to Appendix 22A, *Air Quality Methodology*, for additional modeling
 8 information and assumptions.
- 9 • **Onroad Vehicles:** Onroad vehicles (e.g., pick-up trucks, flatbed trucks) would be required for
 10 material and equipment hauling, tunnel segment hauling, onsite crew and material movement,
 11 employee commuting, and as-needed supply and equipment pick-up. Exhaust emissions from
 12 onroad vehicles were estimated using the EMFAC2014 emissions model and activity data
 13 provided by DWR. Fugitive re-entrained road dust emissions associated with the vehicle trips
 14 were estimated using EPA's (2006b; 2011) *Compilation of Air Pollutant Emission Factors* (AP-
 15 42), Sections 13.2.1 and 13.2.2. Additional vehicle information can be found in Appendices 22A,
 16 *Air Quality Analysis Methodology*, and 22B, *Air Quality Assumptions*.
- 17 • **Site Disturbance and Paving:** Fugitive emissions from earth movement (i.e., site grading,
 18 bulldozing, and truck loading) and paving were quantified using emission factors from
 19 CalEEMod and EPA's (1998) AP-42, Section 11.9. Data on the total graded and paved acreage
 20 and quantity of borrow, excavated, and dredged material for each construction phase, as well as
 21 the estimated maximum acreage and material that would be disturbed and paved in any one
 22 day, were provided by DWR. Please refer to Appendices 22A, *Air Quality Analysis Methodology*,
 23 and 22B, *Air Quality Assumptions*, for additional modeling information.
- 24 • **Concrete Batching:** Fugitive dust emissions from concrete batching were estimated using
 25 concrete data from DWR and emission factors from EPA's AP-42 (2006c) Section 11.12, and
 26 SMAQMD's Concrete Batching Operations Policy Manual (2011). CO₂ emissions were calculated
 27 based on the compression strength required for specific features and emission factors obtained
 28 from Nisbet, Marceau, and VanGeem (2002) and the Slag Cement Association (2013). Additional
 29 information on methodology used to quantify PM and CO₂ emissions from concrete batching can
 30 be found in Appendix 22A, *Air Quality Analysis Methodology*.
- 31 • **Electricity Consumption:** Construction of the water conveyance facility would require the use
 32 of electricity for lighting, tunnel ventilation, boring, and certain types of equipment. Annual
 33 electric demand for all alternatives was provided by DWR and is summarized Appendix 22B, *Air*
 34 *Quality Assumptions*. Emissions associated with the generation, transmission, and distribution of
 35 this electricity were estimated by multiplying the expected annual electricity usage by regional
 36 emission factors developed by EPA (2014d)⁸ and University of California, Davis (Delucchi
 37 2006:110).

⁸ Power will be supplied to BDCP by multiple utilities. The quantity of power supplied by each utility is currently unknown. Consequently, average statewide emission factors, as opposed to utility-specific factors, were used to quantify emissions associated with electricity consumption.

1 **Schedule and Phasing**

2 Construction would occur in multiple phases (e.g., mobilization, land clearing). A detailed
 3 construction schedule for the modified pipeline/tunnel alignment was developed based on an
 4 economic analysis (“cost estimate”) (5RMK, Inc. 2014) provided by DWR. Construction schedules for
 5 all other alignments were developed by DWR, based on data developed for the modified
 6 pipeline/tunnel alignment. Geotechnical work (modified pipeline/tunnel alignment only) would
 7 begin in 2016, following by temporary utilities (all alternatives) in 2017. Construction of CM1
 8 components (e.g., intakes) would begin in 2018. Please refer to Appendix 22B, *Air Quality*
 9 *Assumptions*, for detailed phasing assumptions.

10 **Emissions Scaling**

11 Detailed equipment and vehicle activity assumptions were developed for the modified pipeline
 12 tunnel alignment as part of an economic analysis (“cost estimate”) (5RMK, Inc. 2014) provided by
 13 DWR. A different cost estimate was developed by DWR in 2010 for the pipeline tunnel option and
 14 east canal. The assumptions and methodology used in the 2010 cost estimate have since been
 15 superseded by the approach utilized to develop the 2014 cost estimate. Accordingly, emissions
 16 associated with the pipeline tunnel option and east canal were analyzed using a combination of the
 17 2010 and 2014 cost estimate assumptions, where appropriate, as well as activity scaling factors, as
 18 described further in Appendix, 22A, *Air Quality Analysis Methodology*. Emissions generated by the
 19 west canal and separate corridors option were analyzed using a similar approach, since cost
 20 estimates unique to these alignments were not available at the time of analysis.

21 **Emissions by Air District and Air Basin**

22 The alternatives cross three air basins—SFBAAB, SVAB, and SJVAB—and fall under the jurisdiction
 23 of four air districts—YSAQMD, SMAQMD, BAAQMD, and SJVAPCD; each of these have adopted their
 24 own distinct local thresholds of significance. To compare project generated emissions to the federal
 25 and state thresholds (see below), activities occurring within each air district and air basin were
 26 quantified and analyzed separately.⁹

27 Criteria pollutant and GHG emissions occurring within each air district and air basin were identified
 28 based on the location and schedule of construction activities. Construction locations were identified
 29 using GIS data provided by DWR and are summarized in Appendix 22A, *Air Quality Analysis*
 30 *Methodology*. Annual emissions estimates were developed by summing emissions that would occur
 31 within each year of construction. These emissions were apportioned to each air district based on the
 32 location of construction activity. For example, construction of the tunnel in Reach 4 under
 33 Alternative 4 would occur in both SMAQMD and SJVAPCD. Emissions generated in each year of
 34 construction were calculated using the methods described above. The annual emissions estimates

⁹ The ARB acknowledges that air basins in the Plan area, in particular the SJVAB and SVAB, are both contributors and receptors of pollutant transport throughout the state (California Air Resources Board 2009). While technical documents have been published analyzing the transport relationship amongst California air basins, quantifying the effects of pollutant transport as a result of project implementation would require detailed projections of future climatic and meteorological conditions. Air districts in the Plan area have adopted thresholds and mitigation requirements that commensurate with expected criteria air pollutant contributions from downwind air basins (California Air Resources Board 2011b).

1 were apportioned to SMAQMD and SJVAPCD based on the number of tunnel miles constructed
2 within each air district (see Appendix 22A, *Air Quality Analysis Methodology*).

3 Emissions from each of the above sources are presented at the daily and annual time scales and
4 compared with the air district construction thresholds and federal *de minimis* thresholds discussed
5 below. Peak daily construction emissions were estimated by calculating emissions for the individual
6 construction phases and then summing emissions from overlapping activities as indicated in the
7 proposed construction schedule (see Appendix 22A). The combination of phases across all locations
8 within a specific air district that produce the highest daily emissions in each construction year was
9 selected as the peak day for impact analysis purposes. This approach is meant to convey a
10 reasonable worst-case scenario, and is therefore not necessarily representative of actual emissions
11 that would be incurred on a daily basis throughout the construction period.

12 **Particulate Matter Dispersion Modeling**

13 A HRA was conducted to assess the potential impacts associated with pollutants of material human
14 health concern. The HRA analyzed the potential human health hazard impacts associated with
15 construction of each of the five BDCP alignments. Construction emissions include DPM generated by
16 diesel fuel combustion from construction equipment engine operation. In addition to analyzing DPM
17 emissions, the HRA also evaluated PM_{2.5} and PM₁₀ concentrations resulting from both diesel and
18 gasoline combustion, as well as from fugitive dust generation during earthwork activities (referred
19 to as “localized particulate matter”).

20 The HRA used a four-step approach to evaluate inhalation cancer risks and non-cancer hazards for
21 BDCP construction activities.

- 22 ● The first step—*hazard identification*—involved identifying the pollutants of most concern. For the
23 HRA, these pollutants were identified as DPM and localized particulate matter (PM_{2.5} and
24 PM₁₀) (Huss and Dubose pers. comm.; Jones pers. comm. A; Martien pers. comm.; Martien and
25 Lau pers. comm.; Villalvazo, Siong, and Barber pers. comm.).
- 26 ● The second step—*exposure assessment*—involved estimating the degree of public exposure to DPM
27 and localized particulate emissions associated with construction of the BDCP water conveyance
28 features. In this step, air quality dispersion modeling was performed to estimate DPM, PM_{2.5},
29 and PM₁₀ concentrations at sensitive receptor locations, which include residences, educational
30 facilities, medical facilities, and parks near each alternative. The air modeling used emission
31 estimates associated with each alternative’s construction activities and hourly meteorological
32 data to estimate the construction-related pollutant concentrations at the receptors within the
33 impact zone.
- 34 ● The third step—*dose-response evaluation*—involved estimating chronic non-cancer health hazards
35 and cancer risks, based on the concentrations estimated for the sensitive receptor locations in
36 the exposure assessment. This step involved comparing the highest estimated concentrations of
37 DPM in each air district to the non-cancer exposure threshold (the chronic REL) and also using
38 those highest concentrations to estimate the cancer risks for people potentially exposed at those
39 locations. Also in this step, the highest estimated concentrations of PM_{2.5} and PM₁₀ in each air
40 district were compared to localized PM concentration thresholds, as available.
- 41 ● The fourth step—*risk characterization*—used the results of the dose-response evaluation to
42 characterize the significance of the health risks posed by each alternative’s DPM and localized
43 particulate matter.

1 The HRA methodology is consistent with state and local guidance (BAAQMD 2011; OEHHA 2003;
 2 2009; 2012) for HRAs. Moreover, the analysis utilizes conservative exposure-response assumptions
 3 to ensure health risks are not understated. Values reported in this document therefore represent
 4 evaluation of a worst-case scenario for potential health risks associated with construction of the
 5 BDCP water conveyance facilities. Key assumptions and analysis methods for the localized
 6 particulate matter and DPM analysis are summarized below. A full list of assumptions can be found
 7 in Appendix 22C, *Bay Delta Conservation Plan Air Dispersion Modeling and Health Risk Assessment for*
 8 *Construction Emissions*.

9 **Localized Particulate Matter Dispersion Modeling**

10 The degree of public exposure to localized particulate matter emissions from project construction
 11 was estimated under the exposure assessment portion of the HRA. This portion of the analysis
 12 estimated the PM_{2.5} and PM₁₀ concentrations for sensitive receptors located near the BDCP
 13 construction areas. Predicted concentrations were compared to local air district thresholds, as
 14 available.

15 **Diesel Particulate Matter Dispersion Modeling**

16 The analysis of DPM health risks is based on guidance and methodologies recommended by the
 17 OEHHA (2003; 2009; 2012) and significance thresholds established by the affected air districts. This
 18 assessment uses the OEHHA methodology to characterize cancer risks and non-cancer hazards from
 19 inhaled DPM.

20 The degree of public exposure to DPM was estimated under the exposure assessment portion of the
 21 HRA. Based on the OEHHA guidance, exhaust emission of PM₁₀ was used as surrogate for DPM as
 22 TAC. The analysis was conducted by first estimating the DPM emissions that would be generated by
 23 each alternative's construction areas. Then, air quality dispersion modeling was used to estimate
 24 DPM concentrations at nearby sensitive locations. Two types of health impacts were evaluated:

- 25 ● Chronic non-cancer hazard (averaging period equivalent to the exposure duration)
- 26 ● Cancer risk (70-year ["lifetime"] averaging period)

27 There is limited information that characterizes non-cancer toxicity from acute exposure to DPM. The
 28 estimation of non-cancer health hazards is evaluated using model predicted pollutant
 29 concentrations and normalizing those by the corresponding reference exposure levels (RELs) that
 30 are established by the OEHHA to determine a hazard quotient. RELs are designed to protect
 31 sensitive individuals within the population. Unlike cancer health effects, non-cancer health effects
 32 are generally assumed to have thresholds for adverse effects. In other words, injury from a pollutant
 33 will not occur until exposure to that pollutant has reached or exceeded a certain concentration
 34 threshold. However, no REL currently exists to evaluate acute health hazards associated with DPM.
 35 While acute exposure to DPM can lead to respiratory symptoms, neurophysiological symptoms, and
 36 acute irritation, there is insufficient exposure-response information from available acute health-
 37 effect studies to allow for the development of RELs to evaluate health hazards associated with acute
 38 DPM exposure (U.S. Environmental Protection Agency 2002). The lack of available exposure-
 39 response studies precludes the development of a threshold that would be presumed safe for acute
 40 exposure to DPM. Consequently, DPM acute health hazards were not evaluated in this HRA. Rather,
 41 potential chronic health hazards from DPM, which occur only from exposures via inhalation and the
 42 resulting effects on the respiratory system, were evaluated in this document.

1 The potential for chronic non-cancer hazards is evaluated by comparing the long-term exposure
 2 level (DPM concentration) calculated by air pollutant dispersion modeling to a chronic REL. A
 3 chronic REL is an established concentration at or below which no adverse health effects are
 4 anticipated to occur under continuous exposure for up to a lifetime.

5 Chronic non-cancer hazard quotients (HQ) are calculated by dividing the exposure period's average
 6 concentration (as estimated using air dispersion modeling) by the REL for that substance. When the
 7 HQ exceeds 1.0, there is increased concern that exposed individuals may experience respiratory
 8 system irritation or injury, particularly among sensitive individuals.

9 Cancer risk assessment involves estimating exposure to carcinogenic chemicals and multiplying the
 10 exposure dose by the cancer potency factor. As agreed per consultation with the air districts in the
 11 Study Area and described in Appendix 22C, *Bay Delta Conservation Plan Air Dispersion Modeling and*
 12 *Health Risk Assessment for Construction Emissions*, a significant cancer risk is defined as a risk that
 13 exceeds 10 in one million.

14

15 **Carbon Monoxide Hot-Spots**

16 Increased traffic congestion during construction can contribute to high levels of CO. The Plan Area
 17 air districts have adopted screening criteria that provide a conservative indication of whether a
 18 project will cause a CO hot-spot and would require additional site-specific dispersion modeling to
 19 determine whether CO CAAQS would be exceeded (see Section 22.3.3.1). These screening criteria
 20 were used evaluate potential CO hot-spots created by increased traffic during construction. Vehicle
 21 data was provided by DWR and Fehr & Peers (see Appendix 19A).

22 **22.3.1.2 Operation and Maintenance of the Water Conveyance Facility**

23 Operation of the water conveyance facility would generate long-term (permanent) emissions of
 24 criteria pollutants (ROG, NO_x, CO, PM₁₀, PM_{2.5}), and GHGs (CO₂, CH₄, N₂O, SF₆, and HFCs) that would
 25 result in long-term effects on ambient air quality in the air quality study area. Emissions would
 26 originate from onroad vehicle exhaust, maintenance equipment exhaust, and electrical generation.

27 Operations and maintenance include both routine activities and yearly maintenance. Routine
 28 activities would occur on a daily basis throughout the year, whereas yearly maintenance would
 29 occur annually or every five years. Emissions associated with vehicle traffic and maintenance
 30 equipment were estimated using the EMFAC2014 and CalEEMod models, respectively. Emissions
 31 were quantified for both early long-term (ELT) and late long-term (LLT). Information on personnel
 32 and equipment currently required for O&M is unavailable. Consequently, the analysis assumes
 33 emissions associated with vehicle traffic and equipment are zero under both the No Action
 34 Alternative (NEPA point of comparison) and Existing Conditions (CEQA baseline). This approach
 35 represents a conservative assessment as the net impact of the project will be higher under zero
 36 baseline conditions. Detailed assumptions used in the emissions modeling are provided in Appendix
 37 22A, *Air Quality Analysis Methodology*.

38 Long-term operation of the water conveyance facility would require the use of electricity for
 39 pumping and maintenance, which would result in emissions from the generation, distribution, and
 40 transmission of this electricity. Increases in annually electric consumption for all alternatives
 41 relative to the No Action Alternative (NEPA point of comparison) and Existing Conditions (CEQA

1 baseline) were calculated in Chapter 21, *Energy*, Section 21.3.1.2. Criteria pollutant and GHG
 2 emissions generated by increased electricity consumption were calculated using the emission
 3 factors summarized in Appendix 22A, *Air Quality Analysis Methodology*.

4 **22.3.1.3 Programmatic Assessment of CM2–CM21**

5 Restoration techniques that require physical changes to the environment or that require use of
 6 construction equipment, such as construction and maintenance activities associated with
 7 restoration actions to restore, enhance, and manage physical habitat in the defined conservation
 8 zones (CZs) and Restoration Opportunity Areas (ROAs),¹⁰ would primarily generate temporary
 9 construction emissions through earthmoving activities (e.g., grading), use of mobile and stationary
 10 construction equipment, and onroad vehicle movement. The conservation measures that consist of
 11 programs to reduce the adverse effects of various stressors on covered species (CM12–CM21) are
 12 anticipated to generate the same emissions, relative to Existing Conditions and the No Action
 13 Alternative. Therefore, only the air quality and GHG impacts of CM2–CM11 are analyzed
 14 (programmatically) for the proposed BDCP.

15 Pollutant emissions and associated health and odor impacts are highly dependent on the total
 16 amount of distributed area; the type, location, and duration of construction; and the intensity of
 17 construction activity. Thus, construction effects would vary depending on the habitat restoration
 18 and enhancement conservation actions implemented under the BDCP.

19 Long-term air quality and GHG effects are associated with changes in the permanent, continued daily
 20 use of the study area. Operational emissions from the implementation of CM2–CM11 would
 21 primarily result from vehicle trips for site inspections, monitoring, and routine maintenance.
 22 Implementing CM2–CM11 would also affect long-term sequestration rates through land use changes,
 23 such as conversion of agricultural land to wetlands, inundation of peat soils, drainage of peat soils,
 24 and removal or planting of carbon-sequestering plants (see below).

25 Information on the location and types of construction equipment required for each conservation
 26 measure is unavailable. Likewise, the levels of potential long-term operation and maintenance
 27 activities that may result from implementation of these measures are currently unknown.
 28 Consequently, a quantified analysis of potential criteria pollutant and GHG emissions is not possible,
 29 so a qualitative assessment of air quality effects resulting from the proposed program was
 30 performed. The qualitative analysis took into account typical construction and operation and
 31 maintenance activities that would be undertaken for implementation of the habitat restoration and
 32 enhancement efforts in CM2–CM11, as described in Chapter 3, *Description of Alternatives*, Section
 33 3.6.2.

34 **Land Use Analysis**

35 BDCP includes acreage targets for restoring tidal and riparian habitat, grassland, nontidal marsh,
 36 and seasonal wetland in the study area. Estimating potential changes in GHG emissions from habitat

¹⁰ The Plan Area is subdivided into 11 CZs within which conservation targets for natural communities and covered species' habitats have been established. ROAs encompass those locations in the Plan Area considered most appropriate for the restoration of tidal habitats and within which restoration goals for tidal and associated upland natural communities will be achieved. See Section 3.3.2, *Conservation Measures*, for additional detail.

1 creation involves a considerable amount of uncertainty. In particular, key variables, including
 2 carbon cycling, methane production, and nitrogen cycling vary by land use type, season, and site-
 3 specific chemical and biological characteristics. Depending on these conditions, land use change
 4 associated with the BDCP may result in a net increase or decrease in GHG emissions. To fully
 5 characterize project impacts, additional information is required that is currently unknown. For
 6 example, acreage by land use type, site-specific land characteristics (e.g., salinity, pH, age of trees,
 7 type of grass, carbon content of soils), and fuel consumption data would be required to estimate the
 8 net difference in emissions between the removal and addition of GHGs into the atmosphere (i.e.,
 9 GHG flux). Without local sampling and monitoring data, these values are unknown. Consequently, a
 10 quantified analysis of potential GHG emissions from land use change is not possible; a qualitative
 11 assessment of GHG flux resulting from the proposed program was therefore performed.

12 **22.3.2 Determination of Effects**

13 Potential air quality and GHG impacts were assessed in relation to relevant thresholds of
 14 significance established by agencies with jurisdictional authority, and/or applicable laws and
 15 regulations, including Appendix G of the State CEQA Guidelines. An effect was considered to be
 16 adverse (under NEPA) and significant (under CEQA) if it would result in any of the following
 17 conditions.

- 18 ● Conflict with or obstruct implementation of the applicable air quality plan. For the purposes of
 19 this analysis, “conflict with or obstruct implementation” is defined as circumstances in which
 20 total direct and indirect emissions in excess of General Conformity *de minimis* thresholds
 21 (described below in Section 22.3.2.2) do not conform to the appropriate air basin SIPs. As
 22 discussed in Section 22.2.1.1, conformance is demonstrated by satisfying any of the following
 23 requirements.
 - 24 ○ Showing that the emission increases caused by the federal action are included in the SIP.
 - 25 ○ Demonstrating that the State agrees to revise the SIP to include the emission increases.
 - 26 ○ Offsetting the action’s emissions in the same or nearby area to net zero within the same time
 27 frame as they are generated.
 - 28 ○ Mitigating to reduce the emission increase to net zero.
 - 29 ○ Utilizing a combination of the above options.
- 30 ● Violate any air quality standard or substantially contribute to an existing or projected air quality
 31 violation. For the purposes of this analysis, “violate any air quality standard or substantially
 32 contribute to an existing or project air quality violation” is defined as circumstances in which
 33 construction or operational emissions exceed the applicable air district thresholds described in
 34 Section 22.3.2.1 and identified in Table 22-8.
- 35 ● Result in a cumulatively considerable net increase of any criteria pollutant for which the project
 36 region is non-attainment under an applicable federal or state ambient air quality standard
 37 (including releasing emissions which exceed quantitative thresholds for ozone precursors). For
 38 the purposes of this analysis, a “cumulatively considerable net increase” is defined as
 39 circumstances in which total direct emissions exceed the applicable air district thresholds
 40 identified in Table 22-8. As discussed further in Section 22.3.3.17, the emissions thresholds
 41 presented in Table 22-8 represent the maximum emissions a project may generate before

1 contributing to a cumulative impact on regional air quality. Therefore, exceedances of the
2 project-level thresholds, as identified in Table 22-8, would be cumulatively considerable.

- 3 • Expose sensitive receptors to substantial pollutant concentrations. For the purpose of this
4 analysis, schools, day care facilities, medical facilities, parks, and residences are considered
5 sensitive receptor locations. A “substantial pollutant concentration” is defined as levels in excess
6 of the applicable air district thresholds described in Section 22.3.2.1 and identified in Table 22-
7 8.
- 8 • Create objectionable odors affecting a substantial number of people. For the purpose of this
9 analysis, construction of an odor-producing facility, as defined by the study area air quality
10 management districts, would result in an “objectionable odor” capable of affecting a substantial
11 number of people. Odor-producing facilities include landfills, wastewater treatment plants, food
12 processing facilities, and certain agricultural activities.

13 **22.3.2.1 Local Air District Thresholds**

14 The following section summarizes the local air district thresholds and presents substantial evidence
15 regarding the basis upon which they were developed, as well as describes how they are used to
16 determine whether project construction and operational emissions would:

- 17 • interfere or impede with attainment of State or federal ambient air quality standards (CAAQS
18 and NAAQS, respectively), or
- 19 • cause increased risk to human health.

20 **Regional Thresholds for Air Basin Attainment of State and Federal Ambient Air** 21 **Quality Standards**

22 The alternatives fall under the jurisdiction of four air districts—YSAQMD, SMAQMD, BAAQMD, and
23 SJVAPCD—each of which has different thresholds, as shown in Table 22-8, for regional criteria
24 pollutants (as discussed in section 22.1.2.1, ROG and NO_x are regional pollutants, whereas PM is
25 both a regional and local pollutant). The regional criteria pollutant thresholds identified in Table 22-
26 8 were adopted by the Plan Area air districts to assist lead agencies in determining the significance
27 of environmental effects with regards to local attainment of state and federal ambient air quality
28 standards.

29 **YSAQMD**

30 YSAQMD’s ozone precursor thresholds are based on CCAA requirements and YSAQMD Rule 3.20
31 (Ozone Transport Mitigation). Rule 3.20 accounts for ozone transport to neighboring air basins and
32 establishes a 10 ton per year, “no net increase” threshold for NO_x and ROG from stationary sources.
33 YSAQMD has concluded that the stationary pollutants described under Rule 3.20 are equally
34 significant to those pollutants generated by land use projects, and as such, the 10 ton per year value
35 serves as the project-level threshold for land use development projects within the YSAQMD.
36 YSAQMD’s regional PM₁₀ threshold is based on the NSR program, which requires Best Available
37 Control Technologies (BACT) to be applied when new or modified PM₁₀ emissions exceed 80
38 pounds per day. Therefore, PM₁₀ emissions that trigger the BACT threshold for PM₁₀ would result
39 in substantial air emissions and have a potentially significant impact on local air quality. (Yolo-
40 Solano Air Quality Management District 2007).

1 **SMAQMD**

2 The ozone precursor (ROG and NO_x) threshold adopted by SMAQMD approximately correlates to the
 3 heavy-duty vehicles and land use project emission reduction requirements committed to in the 2004
 4 Ozone Attainment Plan for the Sacramento Federal Ozone Nonattainment Area. Accordingly,
 5 SMAQMD's thresholds have been adopted to assist the Sacramento area in reaching regional
 6 attainment status with the federal and state ozone standards. SMAQMD has not adopted a regional
 7 PM threshold.

8 **BAAQMD and SJVAPCD**

9 BAAQMD and SJVAPCD's ROG, NO_x, and regional PM thresholds are based on emissions levels
 10 identified under the "New Source Review" (NSR) program. The NSR program is a permitting
 11 program that was established by Congress as part of the CAAA to ensure that air quality is not
 12 significantly degraded by new sources of emissions. The NSR program requires stationary sources
 13 receive permits before they start construction and/or use of the equipment. By permitting large
 14 stationary sources, the NSR program assures that new emissions would not slow regional progress
 15 toward attaining the NAAQS. BAAQMD and SJVAPCD have concluded that the stationary pollutants
 16 described under the NSR program are equally significant to those pollutants generated with land use
 17 projects. BAAQMD's and SJVAPCD's regional thresholds identified in Table 22-8 were set as the total
 18 emission thresholds associated within the NSR program to help attain the NAAQS. (Bay Area Air
 19 Quality Management District 2011; San Joaquin Valley Air Pollution Control District 2015).

20 **Health-Based Thresholds for Project-Generated Pollutants of Human Health** 21 **Concern**

22 As discussed in Section 22.1.2, all criteria pollutants are associated with some form of health risk
 23 (e.g., asthma, asphyxiation). Adverse health effects associated with criteria pollutant emissions are
 24 highly dependent on a multitude of interconnected variables (e.g., cumulative concentrations, local
 25 meteorology and atmospheric conditions, the number and character of exposed individuals [e.g.,
 26 age, gender]). Moreover, ozone precursors (ROG and NO_x) affect air quality on a regional scale.
 27 Health effects related to ozone are therefore the product of emissions generated by numerous
 28 sources throughout a region. Existing models have limited sensitivity to small changes in criteria
 29 pollutant concentrations, and as such, translating project-generated criteria pollutants to specific
 30 health effects would produce meaningless results. In other words, minor increases in regional air
 31 pollution from project-generated ROG and NO_x would have nominal or negligible impacts on human
 32 health.¹¹

33 As such, an analysis of impacts to human health associated with project-generated regional
 34 emissions is not included in the project-level analysis. Increased emissions of ozone precursors
 35 (ROG and NO_x) generated by the project (see Section 22.3.3) could increase photochemical reactions
 36 and the formation of tropospheric ozone, which at certain concentrations, could lead to respiratory
 37 symptoms (e.g., coughing), decreased lung function, and inflammation of airways. While these health
 38 effects are associated with ozone, the impacts are a result of cumulative and regional ROG and NO_x

¹¹ As an example, the BAAQMD Multi-Pollutant Evaluation Method (MPEM) requires a 3 to 5 percent increase in regional ozone precursors to produce a material change in modeled human health impacts. Based on 2008 ROG and NO_x emissions in the Bay Area, a 3 to 5 percent increases equates to over 20,000 pounds per day of ROG and NO_x.

1 emissions, and that the incremental contribution of the project to specific health outcomes from
 2 criteria pollutant emissions would be limited and cannot be solely traced to the project. Please refer
 3 to Section 22.3.4 for a discussion of cumulative impacts.

4 Since localized pollutants generated by a project can directly affect adjacent sensitive receptors, the
 5 analysis of project-related impacts to human health focuses only on those localized pollutants with
 6 the greatest potential to result a significant, material impact on human health. This is consistent
 7 with the current state-of-practice and published guidance by SMAQMD (2014), SJVAPCD (2014),
 8 YSAQMD (2007), BAAQMD (2011), CAPCOA (2009), OEHHA (2003), and ARB (2000). The pollutants
 9 of concern include 1) locally concentrated PM and CO, 2) DPM¹², and 3) *C. immitis* (Valley Fever).
 10 Locally adopted thresholds of significance for each pollutant are identified below.

11 **Localized Particulate Matter Concentrations**

12 ***YSAQMD***

13 YSAQMD utilizes the ambient air quality standards as thresholds for localized total (exhaust and
 14 fugitive dust) PM. For the 24-hour and annual PM_{2.5} standards, the district recommends use of the
 15 NAAQS (35 µg/m³) and CAAQS (12 µg/m³), respectively. For the 24-hour and annual PM₁₀
 16 standards, the district recommends use of the CAAQS (50 µg/m³ and 20 µg/m³, respectively). The
 17 district also recommends implementation of BMPs to reduce and control fugitive visible dust (Jones
 18 pers. comm. B)

19 ***SMAQMD***

20 SMAQMD considers a PM impact to be significant if a project would contribute substantially to a
 21 violation of the CAAQS, and considers a substantial contribution to be equal or greater than 5% of
 22 the CAAQS. As such, SMAQMD has established a localized threshold of 0.6 µg/m³ for annual PM_{2.5},
 23 2.5 µg/m³ for 24-hour PM₁₀, and 1 µg/m³ for annual PM₁₀ (exhaust and fugitive). SMAQMD does
 24 not have a localized threshold for 24-hour PM_{2.5} emission concentrations.

25 ***BAAQMD***

26 BAAQMD adopted an incremental PM_{2.5} concentration-based significance threshold, where a
 27 “substantial” contribution is defined as total (exhaust and fugitive) PM_{2.5} concentrations exceeding
 28 0.3 µg/m³. BAAQMD has not established PM₁₀ thresholds of significance. However, BAAQMD
 29 considers fugitive PM₁₀ from earthmoving activities to be significant without application of dust
 30 control measures.

31 The BAAQMD’s Board of Directors adopted these significance thresholds on June 2, 2010 to assist in
 32 the review of projects under CEQA. On March 5, 2012 the Alameda County Superior Court issued a
 33 judgment finding that the BAAQMD had failed to comply with CEQA when it adopted the thresholds.

¹² DPM is the primary TAC of concern for mobile sources—of all controlled TACs, emissions of DPM are estimated to be responsible for about 70 percent of the total ambient TAC risk (California Air Resources Board 2000). Given the risks associated with DPM, tools and factors for evaluating human health impacts from project-generated DPM have been developed and are readily available. Conversely, tools and techniques for assessing project-specific health outcomes as a result of exposure to other TAC (e.g., benzene) remain limited. These limitations impede the ability to evaluate and precisely quantify potential public health risks posed by TAC exposure.

1 Pending final resolution of the case, the BAAQMD is no longer recommending that the June 2, 2010
 2 thresholds be used to assess a project's air quality impacts. The BAAQMD states that lead agencies
 3 may continue to rely on the Air District's 1999 Thresholds of Significance and may continue to make
 4 determinations regarding the significance of an individual project's air quality impacts based on the
 5 substantial evidence in the record for that project (Bay Area Air Quality Management District 2015).
 6 For this air quality analysis, the 2010 thresholds were used because they were established based on
 7 substantial evidence. The BAAQMD released the "Proposed Thresholds of Significance" in 2009,
 8 which listed the proposed thresholds for criteria pollutants, GHGs, community risk and hazards, and
 9 odors. The BAAQMD researched existing and projected sources of air quality contaminants and
 10 designed the 2010 Thresholds to comply with state and federal standards. The report "provides the
 11 substantial evidence in support of the thresholds of significance..." (emphasis added) (Bay Area Air
 12 Quality Management District 2015).

13 ***SJVAPCD***

14 SJVAPCD adopted the EPA's Class II Significant Impact Levels (SILs) for incremental PM
 15 concentration-based significance thresholds. The EPA SILs for annual and 24-hour total (exhaust
 16 and dust) PM_{2.5} were vacated by Courts and new SILs have not been adopted as of the time of this
 17 writing. SJVAPCD (2014) recommends that until new SIL values are approved, PM₁₀ SILs should be
 18 used for both PM₁₀ and PM_{2.5} analyses. Accordingly, the project's total (exhaust and dust) PM_{2.5}
 19 and PM₁₀ concentrations are evaluated against an annual 2.08 µg/m³ threshold and 24-hour 10.4
 20 µg/m³ threshold. Similar to other air districts, the SJVAPCD considers fugitive PM from earthmoving
 21 activities to be significant without application of dust control measures.

22 **Localized Carbon Monoxide Concentrations**

23 Heavy traffic congestion can contribute to high levels of carbon monoxide. Individuals exposed to
 24 these CO "hot-spots" may have a greater likelihood of developing adverse health effects (as
 25 described in Section 22.1.2). The all Plan Area air districts consider localized CO emissions to result
 26 in significant impacts if concentrations exceed the CAAQS (see Table 22-8). All four air districts have
 27 adopted screening criteria that provide a conservative indication of whether a project-generated
 28 traffic will cause a potential CO hot-spot. The air districts establish that if the screening criteria are
 29 not met, a quantitative analysis through site-specific dispersion modeling of project-related CO
 30 concentrations would not be necessary and the project would not cause localized exceedances of CO
 31 CAAQS.

32 Screening criteria adopted by YSAQMD and SJVAPCD focus on whether a project would reduce the
 33 level of service (LOS) at affected intersects to LOS E or F, whereas screening criteria adopted by
 34 SMAQMD and BAAQMD include quantitative criteria based on the number of additional vehicles
 35 added to affected intersections. These quantitative metrics were established based on local
 36 modeling and provide a conservative estimate for the maximum number of vehicles that can be
 37 added to intersection without an exceedance of the CO CAAQS. The BAAQMD and SMAQMD CO
 38 screening criteria are summarized below.

39 ***BAAQMD***

- 40 1. The project traffic would not increase traffic volumes at affected intersections to more than
 41 44,000 vehicles per hour.
- 42 2. The project traffic would not increase traffic volumes at affected intersections to more than
 43 24,000 vehicles per hour where vertical and/or horizontal mixing is substantially limited (e.g.,

1 tunnel, parking garage, bridge underpass, natural or urban street canyon, below-grade
2 roadway).

3 3. Project is consistent with an applicable congestion management program established by the
4 county congestion management agency for designated roads or highways, regional
5 transportation plan, and local congestion management agency plans.

6 **SMAQMD**

7 1. The project will not result in an affected intersection experiencing more than 31,600 vehicles
8 per hour.

9 2. The project will not contribute traffic to a tunnel, parking garage, bridge underpass, urban street
10 canyon, or below-grade roadway; or other locations where horizontal or vertical mixing of air
11 will be substantially limited.

12 3. The mix of vehicle types at the intersection is not anticipated to be substantially different from
13 the County average.

14 Given that the BAAQMD's screening criteria are slightly more conservative than SMAQMD's criteria
15 (affected intersection volume of 24,000 vehicles per hour vs. 31,600 vehicles per hour), the
16 BAAQMD's screening criteria is conservatively used to evaluate whether project-generated traffic in
17 YSAQMD and SJVAPCD would result in a CO hot-spot and violation of the CO CAAQS.

18 **Localized Diesel Particulate Matter Concentrations**

19 DPM is a form of localized PM (see above) that is generated by diesel equipment and vehicle
20 exhaust. DPM has been identified as TAC and is particularly concerning as long-term exposure can
21 lead to cancer, birth defects, and damage to the brain and nervous system. Accordingly, the Plan
22 Area air districts have adopted separate thresholds to evaluate receptor exposure to DPM emissions.
23 The "substantial" DPM threshold defined by the air districts is the probability of contracting cancer
24 for the maximum exposed individual (MEI) exceeding 10 in 1 million, or the ground-level
25 concentrations of non-carcinogenic TACs resulting in a hazard index (HI) greater than 1 for the MEI
26 (see Table 22-8).

27 **Valley Fever Exposure**

28 Valley Fever can develop after receptor exposure to *C. immitis*. While flu-like symptoms develop in
29 less than 40% of individuals exposed to the fungal spores, those presenting symptoms may
30 experience fatigue, cough, chest pain, fever, rash, headache, and joint aches. Neither the State nor the
31 Plan Area air districts have adopted thresholds to evaluate receptor exposure to increased Valley
32 Fever risk. The potential for the project to expose receptors to Valley Fever is highest in areas
33 known to contain *C. immitis* and during earthmoving activities that generate fugitive dust.
34 Accordingly, uncontrolled construction dust emissions in endemic regions of *C. immitis* could result
35 in increased health impacts from exposure of receptors to *C. immitis* spores.

36 **Table 22-8. Air District Thresholds of Significance**

Analysis	YSAQMD	SMAQMD	BAAQMD	SJVAPCD
Regional Criteria	ROG: 10 tons/year	NO _x : 85 lbs/day	ROG: 54 lbs/day	ROG: 10 tons/year
Pollutants	NO _x : 10 tons/year		NO _x : 54 lbs/day	NO _x : 10 tons/year
(Construction)	PM10: 80 lbs/day		PM10: 82 lbs/day (exhaust only)	PM10: 15 tons/year
			PM2.5: 54 lbs/day (exhaust only)	PM2.5: 15 tons/year

Analysis	YSAQMD	SMAQMD	BAAQMD	SJVAPCD
Regional Criteria Pollutants (Operations)	Same as construction	ROG: 65 lbs/day NO _x : 65 lbs/day	ROG: Same as construction NO _x : Same as construction PM10: 82 lbs/day PM2.5: 54 lbs/day	Same as construction
Localized PM2.5	Violation of NAAQS for total (exhaust and dust) emissions (24-hour: 35 µg/m ³) or CAAQS (annual: 12 µg/m ³), and failure to implement dust BMPs	Increase greater than 0.6 µg/m ³ for total (exhaust and dust) concentration (annual) or failure to implement dust emission control practices ^a	Increase greater than 0.3 µg/m ³ for total (exhaust and dust) concentration (annual), and failure to implement fugitive dust	Increase greater than 2.08 µg/m ³ annual average or greater than 10.4 µg/m ³ 24-hour average for total (exhaust and dust) concentration, and failure to implement BMPs
Localized PM10	Violation of CAAQS for total (exhaust and dust) emissions (24-hour: 50 µg/m ³ ; annual: 20 µg/m ³), and failure to implement dust BMPs	Increase greater than 1 µg/m ³ annual or greater than 2.5 µg/m ³ 24-hour average ^a for total (exhaust and dust), or failure to implement emissions control practices ^a	Failure to implement emissions control practices	Increase greater than 2.08 µg/m ³ annual average or greater than 10.4 µg/m ³ 24-hour average for total (exhaust and dust) concentration, and failure to implement BMPs
Localized CO	Violation of CAAQS	Violation of CAAQS	Violation of CAAQS	Violation of CAAQS
Localized DPM	Increased cancer risk of 10 in 1 million or increased non-cancer hazard of greater than 1.0	Increased cancer risk of 10 in 1 million or increased non-cancer hazard of greater than 1.0	Increased cancer risk of 10 in 1 million; increased non-cancer hazard of greater than 1.0 ^b	Increased cancer risk of 10 in 1 million or increased non-cancer hazard of greater than 1.0

Sources: Yolo-Solano Air Quality Management District 2007; Sacramento Metropolitan Air Quality Management District 2014; Bay Area Air Quality Management District 2011; San Joaquin Valley Air Pollution Control District 2002; San Joaquin Valley Air Pollution Control District 2009; Siong pers. comm. 2011; Villalvazo pers. comm.

^a Per the SMAQMD's CEQA guidelines (2014), a "project is considered significant if emissions exceed a CAAQS or contribute substantially to an existing or projected violation of a CAAQS. A substantial contribution is considered an emission that is equal to or greater than 5% of a CAAQS."

^b A quantitative cumulative analysis was not conducted due to the rural nature of the project area (additional major sources are not anticipated in the vicinity of the project area). Consequently, the BAAQMD's quantitative cumulative thresholds of an increase greater than 0.8 µg/m³, increased cancer risk of 100 in 1 million, and increased non-cancer hazard of greater than 10 (HI) were not evaluated. However, cumulative health hazards are considered in relation to ongoing and reasonably foreseeable future projects in the air basin. Please refer to Section 22.3.3.17.

1

2 22.3.2.2 General Conformity *de minimis* Thresholds

3 The following section presents the *de minimis* thresholds applicable to the proposed project that are
4 used to evaluate whether the project would require a conformity determination pursuant to general
5 conformity requirements.

6 Clean Air Act General Conformity Evaluation

7 The air quality study area is in federally classified nonattainment and/or maintenance areas for ozone,
8 CO, PM10, and PM2.5 (Table 22-4). Consequently, to fulfill general conformity requirements, a General
9 Conformity evaluation must be undertaken to identify whether the total ozone, CO, PM10, and PM2.5
10 emissions for the alternatives are subject to the General Conformity rule. The General Conformity
11 evaluation must consider both direct and indirect sources of emissions for all nonattainment and/or

1 maintenance pollutants, which include regulated precursor emissions. Regulated precursor emissions
 2 for ozone include ROG and NO_x. Regulated precursor emissions for PM_{2.5} include SO₂, NO_x, and ROG
 3 (see Table 22-4). Therefore, the General Conformity analysis evaluates each of these direct and
 4 indirect (precursor) emissions.

5 The General Conformity evaluation is made by comparing all emission sources (e.g., haul trucks, off-
 6 road equipment) to the applicable General Conformity *de minimis* thresholds. It should be noted that
 7 because power plants are subject to New Source Review permitting requirements, which are exempt
 8 from the General Conformity rule, emissions associated with electricity generation are not included in
 9 the General Conformity evaluation. Because the attainment status of the four area air basins differ
 10 with respect to ozone, CO, PM₁₀, PM_{2.5}, and SO₂, different *de minimis* thresholds must be applied to
 11 emissions generated within each air basin. Table 22-9 summarizes the *de minimis* thresholds
 12 applicable to each air basin.

13 **Table 22-9. Federal *de minimis* Thresholds by Air Basin (tons per year)**

Pollutant	SFNA	SJVAB	SFBAAB
NO _x ^a	25	10	100
VOC/ROG ^b	25	10	100
CO	100	100	100
PM ₁₀	100	100	-
PM _{2.5}	100	100	100
SO ₂ ^c	100	100	100

^a NO_x is a precursor ozone and PM. NO_x emissions in excess of 100 tons per year within federally designated PM₁₀ or PM_{2.5} nonattainment or maintenance areas trigger a secondary PM threshold.

^b ROG is a precursor ozone.

^c SO₂ is a precursor to PM_{2.5}.

15 **22.3.2.3 Greenhouse Gas Thresholds**

16 **DWR Climate Action Plan/Greenhouse Gas Emissions Reduction Plan**

17 In May 2012, DWR adopted the DWR Climate Action Plan-Phase I: Greenhouse Gas Emissions
 18 Reduction Plan (CAP), which details DWR's efforts to reduce GHG emissions consistent with EO S-3-05
 19 and AB-32 (Appendix 22D, *DWR Climate Action Plan*). The CAP provides estimates of historical (going
 20 back to 1990), current, and future GHG emissions related to operations (e.g., energy use), construction
 21 (e.g., bulldozer), maintenance (e.g., flood protection facility upkeep), and business practices (e.g., DWR
 22 building related). The CAP specifies aggressive 2020 and 2050 emission reduction goals and identifies
 23 a list of GHG emissions reduction measures that DWR will undertake to achieve these goals.

24 DWR prepared its CAP consistent with CEQA Guidelines section 15183.5. This section of the CEQA
 25 Guidelines provides that a "Plan for the Reduction of Greenhouse Gas Emissions," which meets the
 26 specified requirements, "may be used in the cumulative impacts analysis of later projects." More
 27 specifically, "[l]ater project-specific environmental documents may tier from and/or incorporate by
 28 reference" the "programmatic review" conducted for the GHG reduction plan. "An environmental
 29 document that relies on a greenhouse gas reduction plan for a cumulative impacts analysis must
 30 identify those requirements specified in the plan that apply to the project, and, if those requirements
 31 are not otherwise binding and enforceable, incorporate those requirements as mitigation measures
 32 applicable to the project." (CEQA Guidelines section 15183.5.) Because global climate change, by its

1 very nature, is a global cumulative impact¹³, an individual project's compliance with a qualifying
 2 GHG Reduction Plan may suffice to mitigate the project's incremental contribution to that
 3 cumulative impact to a level that is not "cumulatively considerable." (See CEQA Guidelines, §
 4 15064[h][3].)

5 Chapter 12 of DWR's CAP outlines how individual projects can demonstrate consistency with the
 6 CAP so that they may rely on the analysis it provides for the purposes of a CEQA cumulative GHG
 7 impacts analysis. The CAP requires that the following steps be taken to ensure that the project is
 8 consistent with the CAP:

- 9 ● Identify, quantify, and analyze the GHG emissions from the proposed project and alternatives.
 - 10 ○ If construction emissions levels are greater than 25,000 MT CO₂e for the entire construction
 - 11 phase of the project or they exceed 12,500 MT CO₂e in any single year of construction, the
 - 12 project's construction emission cannot rely on the analysis provide in the DWR CAP and
 - 13 must complete a project specific analysis of the construction emissions for CEQA purposes.
- 14 ● Emissions Reduction Measures CO-1 and CO-2 must be incorporated into the design of the
 15 project.
 - 16 ○ CO-1 Construction BMPs designed to minimize fuel consumption by construction and
 - 17 transportation of materials, reduce landfill material usage, and reduce emissions from
 - 18 cement production. DWR's recommended BMPs are listed in Appendix 3B.
 - 19 ○ CO-2 Compliance with CARB's 2007 Off-Road Diesel Vehicle Regulation designed to phase in
 - 20 the use of cleaner engines in diesel vehicles with engines greater than 25 horsepower and
 - 21 any other statewide regulations targeting GHG emissions reductions.
- 22 ● Determine that the project does not conflict with DWR's ability to implement any of the specific
 23 action GHG emissions reduction measures outlined in the CAP.
 - 24 ○ OP-1 Termination of Power Supplies from Reid Gardner Power Plant
 - 25 ○ OP-2 Energy Efficiency Improvements
 - 26 ○ OP-3 Renewable Energy Procurement Plan
 - 27 ○ OP-5 High-Efficiency Energy Resources
 - 28 ○ BP-1 Participate in SMUD Commercial Greenergy Program
 - 29 ○ BP-2 Participate in SMUD Carbon Offset Program
 - 30 ○ BP-3 Implement the DWR Sustainability Policy

31 In addition to all of the above listed requirements, if implementation of the proposed project would
 32 result in additional energy demands on the SWP system of 15 GWh per year or greater the project

¹³ Climate change is a global problem, and GHGs are global pollutants, unlike criteria air pollutants (such as ozone precursors, which are primarily pollutants of regional and local concern. Given their long atmospheric lifetimes (see Table 22-1), GHGs emitted by countless sources worldwide accumulate in the atmosphere. No single emitter of GHGs is large enough to trigger global climate change on its own. Rather, climate change is the result of the individual contributions of countless past, present, and future sources. Therefore, GHG impacts are inherently cumulative.

1 must perform additional analyses with the DWR SWP Power and Risk Office to determine of the
2 additional energy demand will require DWR to take additional steps beyond those identified in the
3 CAP to achieve its emissions reduction goals. If the analyses indicate that the additional load
4 resulting from the proposed project would require DWR to modify existing or implement additional
5 GHG emissions reduction measures, such measures must be approved by DWR SWP Power and Risk
6 Office.

7 The BDCP GHG emissions analysis presented in this chapter meets the consistency requirements
8 detailed in the DWR CAP.

9 **Construction Emissions Approach and Threshold**

10 Consistent with DWR project-level cumulative GHG emission analysis requirements, construction
11 emissions of the BDCP project were calculated consistent with the *Guidance for Quantifying*
12 *Greenhouse Gas Emissions and Determining the Significance of their Contribution to Global Climate*
13 *Change for CEQA Purposes* and a GHG Emission Reduction Plan Consistency Determination Form
14 from DWR's CAP was completed. Project-level GHG reduction measures (CO-1 and CO-2) included in
15 the CAP have also been incorporated into the project design as environmental commitments (see
16 Appendix 3B, *Environmental Commitments*).

17 As indicated in the impact analysis below (Section 22.3.3), BDCP construction emissions are in
18 excess of 25,000 MT CO₂e for each project alternative (except for the No Action Alternative). As
19 such, the significance determination for construction-related emissions cannot be determined by
20 relying on the analysis in DWR's CAP.

21 Neither the CEQA nor NEPA lead agencies have established quantitative significance thresholds for
22 GHG emissions; instead each project put forth by the lead agencies is evaluated on a case by case
23 basis using the most up to date calculation and analysis methods. However, by enacting the Global
24 Warming Solutions Act of 2006 (AB 32), the State Legislature has established statewide GHG
25 reduction targets. Further, the Legislature has determined that GHG emissions, as they relate to
26 global climate change, are a source of adverse environmental impacts in California and should be
27 addressed under CEQA. AB 32 did not amend CEQA, although the legislation identifies the myriad
28 environmental problems in California caused by global warming (Health and Safety Code, Section
29 38501(a)). SB 97, in contrast, added explicit requirements that CEQA analysis address the impacts of
30 GHG emissions (PRC Sections 21083.05 and 21097).

31 Scientific studies (as best represented by the IPCC's periodic reports) demonstrate that climate
32 change is already occurring due to past GHG emissions. Evidence concludes that global emissions
33 must be reduced below current levels to avoid the most severe climate change impacts. Given the
34 seriousness of climate change and the regional significance of BDCP, DWR has determined that for
35 the purposes of this analysis, any substantial increase in construction-related GHG emissions above
36 net zero (0) would result in a significant impact. A net zero threshold represents a conservative
37 assessment of construction emissions considering that any GHGs released during construction will
38 be temporary and cease once construction is complete. Regardless, DWR selected a net zero
39 threshold out of an abundance of caution to avoid underrepresenting potential impacts.

40 In accordance with scientific consensus regarding the cumulative nature of GHGs, the analysis
41 provides a cumulative evaluation of GHG emissions. Unlike traditional cumulative impact
42 assessments, this analysis is still project-specific in that it only evaluates direct emissions generated
43 by BDCP; given the global nature of climate change, the analysis does not include emissions from

1 past, present, and reasonably foreseeable projects in the study area. Consequently, effects associated
 2 with GHG emissions analyzed in this evaluation are cumulative in nature.

3 **Operational Emissions Approach and Threshold**

4 Consistent with DWR project-level cumulative GHG emission analysis requirements, operational
 5 emissions associated with increased SWP pumping and project maintenance are consistent with the
 6 “Guidance for Quantifying Greenhouse Gas Emissions and Determining the Significance of their
 7 Contribution to Global Climate Change for CEQA Purposes” and a GHG Emission Reduction Plan
 8 Consistency Determination Form from DWR’s CAP was completed. BDCP will result in additional
 9 SWP energy demands in excess of 15 GWh/year (see Appendix 22A, *Air Quality Analysis*
 10 *Methodology*, for expected increase in energy demand). Consultation with the DWR SWP Power and
 11 Risk Office has occurred to verify whether DWR’s Renewable Power Procurement Plan would
 12 accommodate the additional energy demand associated with BDCP. Modifications to the Renewable
 13 Power Procurement Plan for alternatives that would require additional renewable energy resources
 14 to maintain DWR’s emissions reduction trajectory have been identified to ensure covered BDCP
 15 activities do not conflict with DWR’s ability to achieve the GHG reductions outlined in the CAP. As
 16 such, operational emissions from 1) increased SWP pumping and 2) project maintenance are
 17 addressed consistent with DWR’s CAP and are found to be less than significant. Please refer to
 18 Appendix 3B, *Environmental Commitments*, Section 3B.1.10 for applicable best management
 19 practices from the CAP that will be implemented by the project.

20 **CVP Operational Emissions Approach and Threshold**

21 New water conveyance facilities associated with BDCP would be constructed, owned, and operated
 22 as a component of the SWP. Water pumped at the new facilities would be primarily for SWP and CVP
 23 customers. Hydropower is the primary energy source for CVP activities. Increased CVP pumping
 24 associated with BDCP will therefore not directly result in increased GHG emissions (hydro is
 25 considered neutral with respect to emissions). However, hydropower supplied to BDCP would
 26 reduce the quantity of hydropower supplied to the California grid and/or other CVP customers.
 27 BDCP may therefore result in an indirect emissions effect as energy from alternative sources (e.g.,
 28 natural gas, solar) would be required to meet this demand.¹⁴ Increased GHG emissions generated by
 29 CVP pumping could impede attainment of statewide renewable and GHG reduction goals, as outlined
 30 in AB 32. Accordingly, an adverse effect would occur if indirect GHG emissions would conflict with
 31 AB 32 and state RPS goals.

¹⁴ While the analysis of GHG impacts focuses on indirect emissions from reduced quantities of hydropower supplied to the California grid, some research suggests that operation of hydroelectric turbines may release dissolved CH₄, resulting in a net source of GHG emissions. Changes in flow rates and water conveyance may also affect GHG flux rates in adjacent canals and rivers. However, the GHG flux rate and amount of released CH₄ is highly variable and depends on a number of site-specific factors, including the reservoir depth, amount of organic material/plant material, the flow rate, and the reservoir/river location (Teodoru et al. 2012). Moreover, it is uncertain how the incremental increase in CVP power demand and changes in water conveyance associated with the BDCP would affect flow rates at individual hydroelectric facilities and associated the relationship among dissolved and atmospheric CH₄. Accordingly, neither an analysis of CH₄ emissions during turbine operation nor changes in GHG flux rates in upstream and downstream tributaries is not included in this EIR/EIS as they would be speculative.

22.3.3 Effects and Mitigation Approaches

22.3.3.1 No Action Alternative

NEPA Effects: The No Action Alternative is the future condition that would occur if none of the action alternatives were implemented. The No Action Alternative includes projects and programs with defined management and/or operational plans, including facilities under construction as of February 13, 2009, because those actions would be consistent with the continuation of existing management direction or level of management for plans, policies, and operations by the NEPA lead agencies and other agencies. The No Action Alternative assumptions also include projects and programs that received approvals and permits in 2009 to remain consistent with existing management direction. A more comprehensive list of projects and programs are listed in Appendix 3D, *Defining Existing Conditions, the No Action/No Project Alternative, and Cumulative Impact Conditions*.

Facilities under construction as of February 13, 2009 would result in short-term criteria pollutant and GHG emissions from land disturbance and the use of heavy-duty equipment. Pollutant emissions are highly dependent on the total amount of disturbed area, the duration of construction, and the intensity of construction activity. In addition, the number and types of heavy-duty equipment significantly affect emissions generated by vehicle exhaust. Construction impacts can thus vary depending on the type of construction project implemented under the No Action Alternative. Construction emissions associated with the No Action Alternative would result in an adverse effect if the incremental difference, or increase, relative to Existing Conditions exceeds applicable air district or federal de minimis thresholds.

As described in Chapter 3, *Description of Alternatives*, many of the ongoing programs include development of future projects that would require additional project-level environmental review. Future federal actions would be required to comply with NEPA and other federal laws and regulations. Mitigation and permit requirements would be implemented on a case-by-case basis,

Activities associated with long-term maintenance of the existing SWP and CVP systems (e.g., inspection trips) would continue, but there would be no changes attributable to the BDCP that would affect long-term operational emissions. Annual electric consumption for pumping under Existing Conditions and the No Action Alternative were calculated in Chapter 21, *Energy* (see Section 21.3.3, Table 21-12). Criteria pollutant and GHG emissions generated by electricity consumption and distribution are presented in Table 22-10.

1 **Table 22-10. Total Criteria Pollutant and GHG Emissions from Electricity Consumption during**
 2 **Operation of the No Action Alternative (tons/year)^{a,b,c}**

Condition	ROG	CO	NO _x	PM10	PM2.5 ^d	SO ₂	CO ₂ e ^e
Existing	9	88	1,212	102	102	512	1,672,965
No Action Alternative (LLT)	7	68	931	79	79	393	1,285,551

^a Emissions assume implementation of RPS (see Appendix 22A, *Air Quality Analysis Methodology*).

^b Because GHG emissions are cumulative (see Section 22.3.2.1) and not evaluated at the local air basin or air district level. The GHG analysis for SWP power utilizes actual and forecasted GHG emissions rates for the SWP system, which differs slightly from the above analysis. Statewide grid average emission factors were utilized for the above analysis as criteria pollutant emission factors for SWP were unavailable.

^c Power plants located throughout the state supply the grid with power, which will be distributed to the study area to meet project demand. Power supplied by statewide power plants will generate criteria pollutants. Because these power plants are located throughout the state, criteria pollutant emissions associated with the No Action Alternative electricity demand cannot be ascribed to a specific air basin or air district within the study area.

^d Emission factors for PM2.5 are currently unavailable. Consequently, PM2.5 emissions were assumed to equal PM10 emissions. Because PM2.5 represents a fraction of PM10, this approach represents a conservative assessment of PM2.5 emissions from electricity consumption.

^e Emissions presented in metric tons of CO₂e.

3
 4 As discussed in Chapter 21, *Energy*, Section 21.3.3.1, there would be no substantial changes in CVP
 5 and SWP energy production or use for the No Action Alternative because there would be no change
 6 in the operations of the existing CVP and SWP hydroelectric generation facilities or pumping
 7 facilities. Because emissions rates are expected to decrease in the future due to state mandates for
 8 renewable energy production, implementation of the No Action Alternative would result in a
 9 decrease in criteria pollutants and GHG emissions.

10 BDCP conservation measures, such as restoration of wildlife habitat in Suisun Marsh, would not take
 11 place, although restoration actions could be undertaken as part of other actions. For example,
 12 approximately 8,000 acres of sensitive habitat in the Delta and vicinity would be restored as part of
 13 the conditions of biological opinions on other state and federal actions, and these restoration actions
 14 could result in temporary air quality effects similar to the effects of the restoration components of
 15 the action alternatives. However, there would be no substantial changes in criteria pollutants or
 16 GHG emissions under the No Action Alternative and therefore no adverse air quality effects above
 17 and beyond those already occurring due to operation of the SWP and CVP. Most of the existing
 18 programs and projects comprising the No Action Alternative would not require substantial
 19 operation and maintenance activities or the use of mechanical equipment in the same area as the
 20 proposed facilities.

21 Because power plants are located throughout the state, criteria pollutant emissions associated with
 22 electricity demand under the No Action Alternative cannot be ascribed to a specific air basin or air
 23 district within the study area and it cannot be determined whether the air pollutant emissions
 24 associated with electricity generation would degrade air quality in a specific air basin or air district
 25 within the study area. Consequently, impacts relating to the electricity consumption under the No
 26 Action Alternative through a comparison of electricity-related emissions to the local thresholds
 27 shown in Table 22-8 or the general conformity *de minimis* thresholds indicated in Table 22-9, which
 28 are established to manage emissions sources under the jurisdiction of individual air districts, would

1 be inappropriate. Criteria pollutant emissions from electricity consumption, which are summarized
 2 in Table 22-10, are therefore provided for informational purposes only and are not included in the
 3 impact conclusion. Consequently, the No Action Alternative would not result in an adverse effect to
 4 air quality.

5 **Climate Change and Catastrophic Seismic Risks**

6 The Delta and vicinity are within a highly active seismic area, with a generally high potential for major
 7 future earthquake events along nearby and/or regional faults, and with the probability for such events
 8 increasing over time. Based on the location, extent and non-engineered nature of many existing levee
 9 structures in the Delta area, the potential for significant damage to, or failure of, these structures
 10 during a major local seismic event is generally moderate to high. (See Appendix 3E, *Potential Seismic
 11 and Climate Change Risks to SWP/CVP Water Supplies* for more detailed discussion). To reclaim land or
 12 rebuild levees after a catastrophic event due to climate change or a seismic event would introduce
 13 considerable heavy equipment and associated vehicles, including dozers, excavators, pumps, water
 14 trucks, and haul trucks, which would generate emissions and create adverse air quality and GHG
 15 effects.

16 **CEQA Conclusion:** Construction of ongoing projects, programs, and plans under the No Action
 17 Alternative would generate short-term emissions that could temporarily affect regional and local air
 18 quality. These projects would be required to comply with air district rules and regulations to reduce
 19 construction-related criteria pollutant and GHG emissions. Mitigation and permit requirements
 20 would be implemented on a case-by-case basis. Energy required for long-term operation of the No
 21 Action Alternative will be supplied by the California electrical grid. Power plants located throughout
 22 the state supply the grid with power, which will be distributed to the study area to meet demand.
 23 Because these power plants are located throughout the state, criteria pollutant emissions associated
 24 with the No Action Alternative electricity demand cannot be ascribed to a specific air basin or air
 25 district within the study area. However, as shown in Table 22-10, operation of the No Action
 26 Alternative would result in a net decrease in all criteria air pollutants and GHG emissions, relative to
 27 Existing Conditions. Consequently, a regional air quality benefit would be realized under the No
 28 Action Alternative. This impact would be less than significant. No mitigation is required.

29 **Climate Change and Catastrophic Seismic Risks**

30 The Delta and vicinity are within a highly active seismic area, with a generally high potential for
 31 major future earthquake events along nearby and/or regional faults, and with the probability for
 32 such events increasing over time. To reclaim land or rebuild levees after a catastrophic event due to
 33 climate change or a seismic event would introduce considerable heavy equipment and associated
 34 vehicles, including dozers, excavators, pumps, water trucks, and haul trucks, which would generate
 35 emissions and create significant air quality and GHG impacts.

36 **22.3.3.2 Alternative 1A—Dual Conveyance with Pipeline/Tunnel and** 37 **Intakes 1–5 (15,000 cfs; Operational Scenario A)**

38 A total of five intakes would be constructed under Alternative 1A. For the purposes of this analysis,
 39 it was assumed that Intakes 1–5 would be constructed. Alternative 1A includes construction of an
 40 intermediate forebay, and the water conveyance facility would be a buried pipeline and tunnels
 41 (Figures 3-2 and 3-3 in Chapter 3, *Description of Alternatives*).

1 Construction and operation of Alternative 1A would require the use of electricity, which would be
2 supplied by the California electrical grid. Power plants located throughout the state supply the grid
3 with power, which will be distributed to the study area to meet project demand. Power supplied by
4 statewide power plants will generate criteria pollutants. Because these power plants are located
5 throughout the state, criteria pollutant emissions associated with Alternative 1A electricity demand
6 cannot be ascribed to a specific air basin or air district within the study area. Comparing emissions
7 to thresholds shown in Table 22-8, which are established to manage emissions sources under the
8 jurisdiction of individual air districts, would therefore be inappropriate. Criteria pollutant emissions
9 from electricity consumption, which are summarized in Table 22-11, are therefore provided for
10 informational purposes only and are not included in the impact conclusion.

1 **Table 22-11. Criteria Pollutant Emissions from Electricity Consumption: Construction and Net**
 2 **Project Operations, Alternative 1A (tons/year)^{a,b}**

Year	Analysis	ROG	CO	NO _x	PM10	PM2.5 ^c	SO ₂
2016	-	0	0	0	0	0	0
2017	-	0	0	0	0	0	0
2018	-	<1	<1	<1	<1	<1	<1
2019	-	<1	3	<1	<1	<1	1
2020	-	<1	13	1	1	1	5
2021	-	<1	34	2	3	3	14
2022	-	<1	47	3	4	4	20
2023	-	<1	42	3	4	4	18
2024	-	<1	44	3	4	4	18
2025	-	<1	30	2	2	2	12
2026	-	<1	11	1	1	1	4
2027	-	<1	2	<1	<1	<1	1
2028	-	<1	<1	<1	<1	<1	<1
2029	-	<1	<1	<1	<1	<1	<1
ELT	CEQA	2	17	230	19	19	97
LLT	NEPA	2	21	285	24	24	120
LLT	CEQA	1	9	119	10	10	50

NEPA = Compares criteria pollutant emissions after implementation of Alternative 1A to the No Action Alternative.

CEQA = Compares criteria pollutant emissions after implementation of Alternative 1A to Existing Conditions.

^a Emissions assume implementation of RPS (see Appendix 22A, *Air Quality Analysis Methodology*). Power plants that generate electricity for the proposed project would be subject to local air district permitting requirements, including standards to implement Best Available Control Technology (BACT) to reduce criteria pollutant emissions.

^b Because GHG emissions are cumulative (see Section 22.3.2.1) and not evaluated at the local air basin or air district level, they are discussed in Impacts AQ-21 and AQ-22. The GHG analysis for SWP power utilizes actual and forecasted GHG emissions rates for the SWP system, which differs slightly from the above analysis. Statewide grid average emission factors were utilized for the above analysis as criteria pollutant emission factors for SWP were unavailable. Please also note that the above analysis does not account for additional renewable energy that will be procured through modifications to DWR's REPP (see Impact AQ-22). Accordingly, the emissions results presented above represent a conservative assessment of potential criteria pollutant emissions.

^c Emission factors for PM2.5 are currently unavailable. Consequently, PM2.5 emissions were assumed to equal PM10 emissions. Because PM2.5 represents a fraction of PM10, this approach represents a conservative assessment of PM2.5 emissions from electricity consumption.

3

1 Construction activities would generate emissions of ozone precursors (ROG and NO_x), CO, PM10,
2 PM2.5, and SO₂. Table 22-12 summarizes criteria pollutant emissions that would be generated in the
3 BAAQMD, SMAQMD, SJVAPCD, and YSAQMD in pounds per day and tons per year. Emissions
4 estimates include implementation of environmental commitments (see Appendix 3B, *Environmental*
5 *Commitments*). Although emissions are presented in different units (pounds and tons), the amounts
6 of emissions are identical (i.e., 2,000 pounds is identical to 1 ton). Summarizing emissions in both
7 pounds per day and tons per year is necessary to evaluate project-level effects against the
8 appropriate air district thresholds, which are given in both pounds and tons (see Table 22-8).

9 As shown in Appendix 22B, *Air Quality Assumptions*, construction activities during several phases will
10 likely occur concurrently. To ensure a conservative analysis, the maximum daily emissions during
11 these periods of overlap were estimated assuming all equipment would operate at the same time—
12 this gives the maximum total project-related air quality impact during construction. Accordingly, the
13 daily emissions estimates represent a conservative assessment of construction impacts.
14 Exceedances of the air district thresholds are shown in underlined text.
15

1 **Table 22-12. Criteria Pollutant Emissions from Construction of Alternative 1A (pounds/day and tons/year)**

Year	Maximum Daily Emissions (pounds/day)										Annual Emissions (tons/year)									
	Bay Area Air Quality Management District																			
	ROG	NO _x	CO	PM10			PM2.5			SO ₂	ROG	NO _x	CO	PM10			PM2.5			SO ₂
				Exhaust	Dust	Total	Exhaust	Dust	Total					Exhaust	Dust	Total	Exhaust	Dust	Total	
2016	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2017	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2018	11	158	69	1	102	103	1	25	26	2	<1	2	2	<1	1	1	<1	<1	<1	<1
2019	28	349	188	2	168	170	2	41	43	3	2	18	15	<1	3	3	<1	1	1	<1
2020	42	457	274	3	195	198	3	48	51	4	4	29	25	<1	5	5	<1	1	1	<1
2021	46	505	295	3	223	226	3	55	58	4	5	38	33	<1	7	8	<1	2	2	<1
2022	53	608	329	4	293	297	3	74	77	5	5	44	34	<1	11	11	<1	3	3	<1
2023	114	1,039	674	8	479	487	8	105	112	9	9	67	53	1	25	26	1	5	6	1
2024	123	1,174	716	9	600	608	8	135	143	11	12	92	74	1	31	32	1	6	7	1
2025	113	1,109	651	7	565	572	7	130	137	10	8	57	46	1	21	21	1	4	5	1
2026	75	820	448	5	487	491	5	113	117	9	6	44	34	<1	19	20	<1	4	4	<1
2027	64	698	373	9	445	454	8	103	111	8	3	24	18	<1	16	16	<1	3	3	<1
2028	24	387	151	2	343	345	2	79	81	4	<1	3	1	<1	5	5	<1	1	1	<1
2029	8	154	49	1	113	113	1	29	30	2	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Thresholds	54	54	-	82	BMPs	-	54	BMPs	-	-	-	-	-	-	-	-	-	-	-	-
Year	Sacramento Metropolitan Air Quality Management District										Sacramento Metropolitan Air Quality Management District									
	Sacramento Metropolitan Air Quality Management District																			
	ROG	NO _x	CO	PM10			PM2.5			SO ₂	ROG	NO _x	CO	PM10			PM2.5			SO ₂
				Exhaust	Dust	Total	Exhaust	Dust	Total					Exhaust	Dust	Total	Exhaust	Dust	Total	
2016	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2017	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2018	74	827	492	14	179	193	13	32	45	3	3	28	19	1	11	11	1	2	2	<1
2019	71	738	491	8	337	345	8	58	66	4	4	27	33	1	24	25	1	3	4	<1
2020	96	1,073	658	12	420	433	12	68	80	4	9	70	60	1	35	36	1	5	6	<1
2021	118	1,281	800	14	543	556	13	89	102	5	11	98	84	1	50	51	1	7	8	<1
2022	191	2,015	1,524	18	794	809	18	126	143	12	17	135	142	2	72	73	1	10	11	1
2023	395	3,471	2,769	42	1,163	1,199	40	184	221	29	36	284	274	3	107	111	3	15	18	2
2024	561	4,992	3,624	64	1,579	1,643	62	256	317	32	46	347	316	5	130	135	5	18	23	2
2025	509	4,950	3,396	59	1,695	1,753	57	263	319	31	34	247	228	4	86	90	4	12	16	1
2026	361	2,885	2,071	36	911	947	35	168	203	23	32	214	201	4	77	80	3	11	15	1
2027	389	3,309	2,368	50	1,009	1,059	49	179	228	31	28	205	179	4	87	91	3	13	16	1
2028	172	1,454	960	11	675	685	11	120	130	8	8	52	47	1	35	36	1	5	6	<1
2029	22	331	164	2	171	173	2	38	40	3	<1	3	3	<1	3	3	<1	<1	<1	<1
Thresholds	-	85	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Year	San Joaquin Valley Air Pollution Control District										San Joaquin Valley Air Pollution Control District									
	ROG	NO _x	CO	PM10			PM2.5			SO ₂	ROG	NO _x	CO	PM10			PM2.5			SO ₂
				Exhaust	Dust	Total	Exhaust	Dust	Total					Exhaust	Dust	Total	Exhaust	Dust	Total	
2016	0	0	0	0	29	29	0	4	4	0	0	0	0	2	2	0	0	0	0	
2017	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
2018	29	135	199	2	113	116	2	14	16	1	2	7	11	<1	12	12	<1	2	2	<1
2019	97	750	701	8	192	201	8	24	32	3	<u>11</u>	<u>81</u>	78	1	18	<u>19</u>	1	2	3	<1
2020	190	1,391	1,339	18	309	327	17	38	55	5	<u>20</u>	<u>139</u>	137	2	35	<u>36</u>	2	4	6	<1
2021	271	2,072	1,906	29	719	747	28	83	111	7	<u>30</u>	<u>217</u>	217	3	56	<u>58</u>	3	7	9	1
2022	200	1,338	1,479	16	274	290	15	35	50	4	<u>28</u>	<u>185</u>	210	2	33	<u>35</u>	2	4	6	1
2023	175	1,105	1,283	12	175	187	11	23	34	4	<u>25</u>	<u>151</u>	184	2	17	<u>19</u>	2	2	4	1
2024	172	1,032	1,233	10	148	159	10	20	30	3	<u>24</u>	<u>139</u>	169	1	16	<u>18</u>	1	2	4	<1
2025	143	839	963	8	117	125	8	16	24	3	<u>15</u>	<u>92</u>	105	1	13	14	1	2	3	<1
2026	94	592	602	5	77	82	5	9	14	2	6	<u>37</u>	35	<1	3	3	<1	<1	1	<1
2027	4	5	18	14	3	17	14	1	15	0	<1	<1	1	1	<1	1	<1	<1	1	<1
2028	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2029	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<i>Thresholds</i>	-	-	-	-	-	-	-	-	-	-	<i>10</i>	<i>10</i>	-	-	-	<i>15</i>	-	-	<i>15</i>	-
Year	Yolo Solano Air Quality Management District										Yolo Solano Air Quality Management District									
	ROG	NO _x	CO	PM10			PM2.5			SO ₂	ROG	NO _x	CO	PM10			PM2.5			SO ₂
				Exhaust	Dust	Total	Exhaust	Dust	Total					Exhaust	Dust	Total	Exhaust	Dust	Total	
2016	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2017	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2018	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2019	4	112	23	<1	30	31	<1	8	8	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
2020	4	112	24	<1	30	31	<1	8	8	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
2021	8	199	44	1	55	56	1	14	15	1	<1	3	1	<1	1	1	<1	0	0	0
2022	16	391	88	1	112	<u>114</u>	1	29	30	2	1	<u>17</u>	4	<1	5	5	<1	1	1	0
2023	21	454	122	1	164	<u>165</u>	1	42	44	3	1	<u>15</u>	4	<1	5	5	<1	1	1	0
2024	21	444	121	1	164	<u>165</u>	1	42	44	3	1	<u>14</u>	4	<1	5	5	<1	1	1	0
2025	20	418	117	1	158	<u>159</u>	1	41	42	3	<1	10	3	<1	4	4	<1	1	1	0
2026	16	329	94	1	127	<u>128</u>	1	33	34	3	<1	9	3	<1	3	3	<1	1	1	0
2027	16	318	93	1	127	<u>128</u>	1	33	34	3	<1	10	3	<1	4	4	<1	1	1	0
2028	13	252	75	1	102	<u>103</u>	1	26	27	2	<1	9	3	<1	4	4	<1	1	1	0
2029	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<i>Thresholds</i>	-	-	-	-	-	<i>80</i>	-	-	-	-	<i>10</i>	<i>10</i>	-	-	-	-	-	-	-	-

1 Operation and maintenance activities under Alternative 1A would result in emissions of ROG, NO_x,
 2 CO, PM10, PM2.5, and SO₂. Emissions were quantified for both ELT and LLT conditions, although
 3 activities would take place annually until project decommissioning. Future emissions, in general, are
 4 anticipated to lessen because of continuing improvements in vehicle and equipment engine
 5 technology.

6 Table 22-13 summarizes criteria pollutant emissions associated with operation of Alternative 1A in
 7 the BAAQMD, SMAQMD, and SJVAPCD in pounds per day and tons per year (no operational
 8 emissions would be generated in the YSAMQD). Although emissions are presented in different units
 9 (pounds and tons), the amounts of emissions are identical (i.e., 2,000 pounds is identical to 1 ton).
 10 Summarizing emissions in both pounds per day and tons per year is necessary to evaluate project-
 11 level effects against the appropriate air district thresholds, which are given in both pounds and tons
 12 (see Table 22-8).

13 **Table 22-13. Criteria Pollutant Emissions from Operation of Alternative 1A (pounds per day and tons**
 14 **per year)**

Condition	Maximum Daily Emissions (pounds/day)						Annual Emissions (tons/year)					
	Bay Area Air Quality Management District						Bay Area Air Quality Management District					
	ROG	NO _x	CO	PM10	PM2.5	SO ₂	ROG	NO _x	CO	PM10	PM2.5	SO ₂
ELT	3	19	32	6	2	<1	0.01	0.08	0.14	0.02	0.01	<0.01
LLT	3	16	31	6	1	<1	0.01	0.07	0.14	0.02	0.01	<0.01
<i>Thresholds</i>	<i>54</i>	<i>54</i>	<i>-</i>	<i>82</i>	<i>82</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>
Condition	Sacramento Metropolitan Air Quality Management District						Sacramento Metropolitan Air Quality Management District					
	ROG	NO _x	CO	PM10	PM2.5	SO ₂	ROG	NO _x	CO	PM10	PM2.5	SO ₂
ELT	4	27	51	9	3	<1	0.21	1.24	2.60	0.42	0.12	0.01
LLT	4	23	48	8	2	<1	0.18	1.05	2.48	0.41	0.11	0.01
<i>Thresholds</i>	<i>65</i>	<i>65</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>
Condition	San Joaquin Valley Air Pollution Control District						San Joaquin Valley Air Pollution Control District					
	ROG	NO _x	CO	PM10	PM2.5	SO ₂	ROG	NO _x	CO	PM10	PM2.5	SO ₂
ELT	3	19	36	6	2	<1	0.01	0.07	0.13	0.02	<0.01	<0.01
LLT	3	16	33	6	1	<1	0.01	0.06	0.12	0.01	<0.01	<0.01
<i>Thresholds</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>10</i>	<i>10</i>	<i>-</i>	<i>15</i>	<i>15</i>	<i>-</i>

15
 16 **Impact AQ-1: Generation of Criteria Pollutants in Excess of the SMAQMD Regional Thresholds**
 17 **during Construction of the Proposed Water Conveyance Facility**

18 **NEPA Effects:** As shown in Table 22-12, construction emissions would exceed SMAQMD's daily NO_x
 19 threshold for all years between 2018 and 2029, even with implementation of environmental
 20 commitments (see Appendix 3B, *Environmental Commitments*). All other pollutants would be below
 21 air district thresholds and therefore would not result in an adverse regional air quality effect. Since
 22 NO_x is a precursor to ozone and PM, exceedances of SMAQMD's daily NO_x threshold could impact
 23 both regional ozone and PM formation, which could worsen regional air quality and air basin
 24 attainment of the NAAQS and CAAQS.

25 While equipment could operate at any work area identified for this alternative, the highest level of
 26 NO_x emissions in the SMAQMD is expected to occur at those sites where the duration and intensity

1 of construction activities would be greatest. This includes all intake and intake pumping plant sites
 2 along the east bank of the Sacramento River, as well as the intermediate forebay (and pumping
 3 plant) site west of South Stone Lake and east of the Sacramento River.

4 DWR has identified several environmental commitments to reduce construction-related criteria
 5 pollutants in the SMAQMD (see Appendix 3B, *Environmental Commitments*). These commitments
 6 include performance standards for newer and cleaner off-road equipment, marine vessels, and haul
 7 trucks. All tunneling locomotives would be required to utilize Tier 4 engines, and air district
 8 recommended BMPs for proper engine maintenance and idling restrictions would also be
 9 implemented. These environmental commitments will reduce construction-related emissions;
 10 however, as shown in Table 22-12, NO_x emissions would still exceed SMAQMD's threshold identified
 11 in Table 22-8.

12 Mitigation Measures AQ-1a and AQ-1b would be available to reduce NO_x emissions, and would thus
 13 address regional effects related to secondary ozone and PM formation.

14 **CEQA Conclusion:** NO_x emissions generated during construction would exceed SMAQMD's threshold
 15 identified in Table 22-8. Since NO_x is a precursor to ozone and PM, exceedances of SMAQMD's daily
 16 NO_x threshold could impact both regional ozone and PM formation. SMAQMD's regional emissions
 17 thresholds (Table 22-8) have been adopted to ensure projects do not hinder attainment of the
 18 CAAQS or NAAQS. The impact of generating NO_x emissions in excess of local air district thresholds
 19 would therefore violate applicable air quality standards in the study area and could contribute to or
 20 worsen an existing air quality conditions. This would be a significant impact. Mitigation Measures
 21 AQ-1a and AQ-1b would be available to reduce NO_x emissions to a less-than-significant level by
 22 offsetting emissions to quantities below SMAQMD CEQA thresholds (see Table 22-8).

23 **Mitigation Measure AQ-1a: Mitigate and Offset Construction-Generated Criteria Pollutant**
 24 **Emissions within the SFNA to Net Zero (0) for Emissions in Excess of General Conformity**
 25 ***De Minimis* Thresholds (Where Applicable) and to Quantities below Applicable CEQA**
 26 **Thresholds for Other Pollutants¹⁵**

27 DWR will reduce criteria pollutant emissions generated by the construction of the water
 28 conveyance facilities associated with BDCP within the SFNA through the creation of offsetting
 29 reductions of emissions. The preferred means of undertaking such offsite mitigation shall be
 30 through a partnership with the SMAQMD involving the payment of offsite mitigation fees.
 31 Criteria pollutants in excess of the federal *de minimis* thresholds shall be reduced to net zero (0)
 32 (see Table 22-9). Criteria pollutants not in excess of the *de minimis* thresholds, but above any
 33 applicable air pollution control or air quality management district CEQA thresholds¹⁶ shall be
 34 reduced to quantities below the numeric thresholds (see Table 22-8).¹⁷

¹⁵ In the title of this mitigation measure, the phrase "for other pollutants" is intended to apply to other alternatives, where associated impacts to other pollutants may exceed thresholds other than NO_x.

¹⁶ For example, NO_x emissions in a certain year may exceed BAAQMD's 54 pound per day CEQA threshold, but not the 100 ton annual *de minimis* threshold. According to Appendix G of the State CEQA Guidelines, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make determinations regarding the significance of an impact.

¹⁷ For example, emissions of NO_x generated by Alternative 1A both exceed the federal *de minimis* threshold for the SVAB and the SMAQMD's CEQA threshold. NO_x emissions must therefore be reduced to net zero (0).

1 DWR will undertake in good faith an effort to enter into a development mitigation contract with
 2 SMAQMD in order to reduce criteria pollutant emissions generated by the construction of the
 3 water conveyance facilities associated with BDCP. The preferred source of emissions reductions
 4 for NO_x, PM, and ROG shall be through contributions to SMAQMD's HDLEVIP. The HDLEVIP is
 5 designed to reduce NO_x, PM, and ROG from on- and offroad sources. The program is managed
 6 and implemented by SMAQMD on behalf of all air districts within the SFNA, including the
 7 YSAQMD.

8 SMAQMD's incentive programs are a means of funding projects and programs capable of
 9 achieving emissions reductions. The payment fee is based on the average cost to achieve one ton
 10 per day (tpd) of reductions based on the average cost for reductions over the previous year.
 11 Onroad reductions averaged (nominally) \$44 million (NO_x only) and off-road reductions
 12 averaged \$36 million (NO_x only) over the previous year, thus working out to approximately \$40
 13 million per one tpd of reductions. This rate roughly correlates to the average cost effectiveness
 14 of the Carl Moyer Incentive Program.

15 If DWR is successful in reaching what it regards as a satisfactory agreement with SMAQMD,
 16 DWR will enter into mitigation contracts with SMAQMD to reduce NO_x, PM, or ROG (as
 17 appropriate) emissions to the required levels. Such reductions may occur within the SMAQMD
 18 and/or within another air district within the SFNA. The required levels are:

- 19 • For emissions in excess of the federal *de minimis* threshold: **net zero (0)** (see Table 22-9).
- 20 • For emissions not in excess of *de minimis* thresholds but above the appropriate SMAQMD
 21 standards: **below the appropriate CEQA threshold levels** (see Table 22-8.)

22 Implementation of this mitigation would require DWR to adopt the following specific
 23 responsibilities.

- 24 • Consult with the SMAQMD in good faith with the intention of entering into a mitigation
 25 contract with SMAQMD for the HDLEVIP. For SIP purposes, the necessary reductions must
 26 be achieved (contracted and delivered) by the applicable year in question (i.e., emissions
 27 generated in year 2016 would need to be reduced offsite in 2016). Funding would need to
 28 be received prior to contracting with participants and should allow sufficient time to receive
 29 and process applications to ensure offsite reduction projects are funded and implemented
 30 prior to commencement of BDCP activities being reduced. This would roughly equate to the
 31 equivalent of two years prior to the required mitigation; additional lead time may be
 32 necessary depending on the level of offsite emission reductions required for a specific year.
 33 In negotiating the terms of the mitigation contract, DWR and SMAQMD should seek
 34 clarification and agreement on SMAQMD responsibilities, including the following.
 - 35 ○ Identification of appropriate offsite mitigation fees required for BDCP.
 - 36 ○ Timing required for obtaining necessary offsite emission credits.
 - 37 ○ Processing of mitigation fees paid by DWR.
 - 38 ○ Verification of emissions inventories submitted by DWR.
 - 39 ○ Verification that offsite fees are applied to appropriate mitigation programs within the
 40 SFNA.
- 41 • Quantify mitigation fees required to satisfy the appropriate reductions. As noted above, the
 42 payment fees may vary by year and are sensitive to the number of projects requiring

1 reductions within the SFNA. The schedule in which payments are provided to SMAQMD also
 2 influences overall cost. For example, a higher rate on a per-tonnage basis will be required
 3 for project elements that need accelerated equipment turn-over to achieve near-term
 4 reductions, whereas project elements that are established to contract to achieve far-term
 5 reductions will likely pay a lower rate on a per-tonnage basis.

- 6 • Develop a compliance program to calculate emissions and collect fees from the construction
 7 contractors for payment to SMAQMD. The program will require, as a standard or
 8 specification of their construction contracts with DWR, that construction contractors
 9 identify construction emissions and their share of required offsite fees, if applicable. Based
 10 on the emissions estimates, DWR will collect fees from the individual construction
 11 contractors (as applicable) for payment to SMAQMD. Construction contractors will have the
 12 discretion to reduce their construction emissions to the lowest possible level through
 13 additional onsite mitigation, as the greater the emissions reductions that can be achieved by
 14 onsite mitigation, the lower the required offsite fee. Acceptable options for reducing
 15 emissions may include use of late-model engines, low-emission diesel products, additional
 16 electrification or alternative fuels, engine-retrofit technology, and/or after-treatment
 17 products. All control strategies must be verified by SMAQMD.
- 18 • Conduct daily and annual emissions monitoring to ensure onsite emissions reductions are
 19 achieved and no additional mitigation payments are required. Excess offsite funds can be
 20 carried from previous to subsequent years in the event that additional reductions are
 21 achieved by onsite mitigation. At the end of the project, if it is determined that excess offset
 22 funds remain (outstanding contracts and administration over the final years of the contracts
 23 will be taken into consideration), SMAQMD and DWR shall determine the disposition of final
 24 funds (e.g., additional emission reduction projects to offset underperforming contracts,
 25 return of funds to DWR, etc.).

26 If a sufficient number of emissions reduction projects are not identified to meet the required
 27 performance standard, DWR will coordinate with SMAQMD to ensure the performance
 28 standards of achieving net zero (0) for emissions in excess of General Conformity *de minimis*
 29 thresholds (where applicable) and of achieving quantities below applicable CEQA thresholds for
 30 other pollutants not in excess of the *de minimis* thresholds but above CEQA thresholds are met.

31 **Mitigation Measure AQ-1b: Develop an Alternative or Complementary Offsite Mitigation**
 32 **Program to Mitigate and Offset Construction-Generated Criteria Pollutant Emissions**
 33 **within the SFNA to Net Zero (0) for Emissions in Excess of General Conformity *De Minimis***
 34 **Thresholds (Where Applicable) and to Quantities below Applicable CEQA Thresholds for**
 35 **Other Pollutants**

36 Should DWR be unable to enter into what they regard as a satisfactory agreement with SMAQMD
 37 as contemplated by Mitigation Measure AQ-1a, or should DWR enter into an agreement with
 38 SMAQMD but find themselves unable to meet the performance standards set forth in Mitigation
 39 Measure AQ-1a, DWR will develop an alternative or complementary offsite mitigation program
 40 to reduce criteria pollutant emissions generated by the construction of the water conveyance
 41 facilities associated with BDCP. The offsite mitigation program will offset criteria pollutant
 42 emissions to the required levels identified in Mitigation Measure AQ-1a. Accordingly, the
 43 program will ensure that the project does not contribute to or worsen existing air quality
 44 exceedances. Whether this program will address emissions beyond NO_x, PM, or ROG, will turn

1 on whether DWR has achieved sufficient reductions of those pollutants pursuant to Mitigation
2 Measure AQ-1a.

3 The offsite mitigation program will establish a program to fund emission reduction projects
4 through grants and similar mechanisms. All projects must provide contemporaneous (occur in
5 the same calendar year as the emission increases) and localized (i.e., within the SFNA) emissions
6 benefit to the area of effect. DWR may identify emissions reduction projects through
7 consultation with SMAQMD, other air districts within the SFNA, and ARB, as needed. Potential
8 projects could include, but are not limited to the following.

- 9 • Alternative fuel, low-emission school buses, transit buses, and other vehicles.
- 10 • Diesel engine retrofits and repowers.
- 11 • Locomotive retrofits and repowers.
- 12 • Electric vehicle or lawn equipment rebates.
- 13 • Electric vehicle charging stations and plug-ins.
- 14 • Video-teleconferencing systems for local businesses.
- 15 • Telecommuting start-up costs for local businesses.

16 As part of its alternative or complementary offsite mitigation program, DWR will develop
17 pollutant-specific formulas to monetize, calculate, and achieve emissions reductions in a cost-
18 effective manner. Construction contractors, as a standard specification of their construction
19 contracts with DWR, will identify construction emissions and their share of required offset fees.
20 DWR will verify the emissions estimates submitted by the construction contractors and
21 calculate the required fees. Construction contractors (as applicable) will be required to
22 surrender required fees to DWR prior to the start of construction. Construction contractors will
23 have the discretion to reduce their construction emissions to the lowest possible level through
24 additional onsite mitigation, as the greater the emissions reductions that can be achieved by
25 onsite mitigation, the lower the required offset fee. Acceptable options for reducing emissions
26 may include, but are not limited to, the use of late-model engines, low-emission diesel products,
27 additional electrification or alternative fuels, engine-retrofit technology, and/or after-treatment
28 products. All control strategies must be verified by SMAQMD, the ARB, any relevant air pollution
29 control or air quality management district within the SFNA, or by a qualified air quality expert
30 employed by or retained by DWR.

31 The offsite fee, grant, or other mechanism will be calculated or formulated based on the actual
32 cost of pollutant reductions. No collected offset fees will be used to cover administrative costs;
33 offset fees or other payments are strictly limited to procurement of offsite emission reductions.
34 Fees or other payments collected by DWR will be allocated to emissions reductions projects in a
35 grant-like manner. DWR shall document the fee schedule basis, such as consistency with the
36 ARB's Carl Moyer Program cost-effectiveness limits and capital recovery factors.

37 DWR will conduct annual reporting to verify and document that emissions reductions projects
38 achieve a 1:1 reduction with construction emissions to ensure claimed offsets meet the required
39 performance standard. All offsite reductions must be quantifiable, verifiable, enforceable, and
40 satisfy the basic criterion of additionally (i.e., the reductions would not happen without the
41 financial support of purchased offset credits). Annual reports will include, at a minimum the
42 following components.

- 1 • Total amount of offset fees received.
- 2 • Total fees distributed to offsite projects.
- 3 • Total fees remaining.
- 4 • Projects funded and associated pollutant reductions realized.
- 5 • Total emission reductions realized.
- 6 • Total emissions reductions remaining to satisfy the requirements of Mitigation Measure AQ-
7 1b.
- 8 • Overall cost-effectiveness of the projects funded.

9 If a sufficient number of emissions reduction projects are not identified to meet the required
10 performance standard, DWR will consult with SMAQMD, the ARB, any relevant air pollution
11 control or air quality management district within the SFNA, or a qualified air quality expert
12 employed by or retained by DWR to ensure conformity is met through some other means of
13 achieving the performance standards of achieving net zero (0) for emissions in excess of General
14 Conformity *de minimis* thresholds (where applicable) and of achieving quantities below
15 applicable CEQA thresholds for other pollutants.

16 **Impact AQ-2: Generation of Criteria Pollutants in Excess of the YSAQMD Regional Thresholds** 17 **during Construction of the Proposed Water Conveyance Facility**

18 ***NEPA Effects:*** As shown in Table 22-12, construction emissions would exceed YSAQMD regional
19 thresholds for the following pollutants and years, even with implementation of environmental
20 commitments (see Appendix 3B, *Environmental Commitments*). All other pollutants would be below
21 air district thresholds and therefore would not result in an adverse air quality effect.

- 22 • NO_x: 2022–2024
- 23 • PM₁₀: 2022–2028

24 Since NO_x is a precursor to ozone and NO_x is a precursor to PM, exceedances of YSAQMD's NO_x
25 threshold could impact both regional ozone and PM formation, which could worsen regional air
26 quality and air basin attainment of the NAAQS and CAAQS. Similarly, exceedances of YSAQMD's
27 PM₁₀ threshold could impede attainment of the NAAQS and CAAQS for PM₁₀. All emissions
28 generated within YSAQMD are a result of haul truck movement for equipment and material delivery.

29 Environmental commitments outlined in Appendix 3B, *Environmental Commitments*, will reduce
30 construction-related emissions; however, as shown in Table 22-12, NO_x and PM₁₀ emissions would
31 still exceed the applicable YSAQMD thresholds identified in Table 22-8 and result in an adverse
32 regional effect to air quality. Mitigation Measures AQ-1a and AQ-1b are available to reduce NO_x and
33 PM₁₀ emissions, and would thus address regional effects related to secondary ozone and PM
34 formation.

35 ***CEQA Conclusion:*** Emissions of NO_x and PM₁₀ generated during construction would exceed
36 YSAQMD's regional thresholds identified in Table 22-8. Since NO_x is a precursor to ozone and NO_x is
37 a precursor to PM, exceedances of YSAQMD's NO_x threshold could impact both regional ozone and
38 PM formation, which could worsen regional air quality and air basin attainment of the NAAQS and
39 CAAQS. Similarly, exceedances of YSAQMD's PM₁₀ threshold could impede attainment of the NAAQS
40 and CAAQS for PM₁₀. YSAQMD's regional emissions thresholds (Table 22-8) have been adopted to

1 ensure projects do not hinder attainment of the CAAQS or NAAQS. The impact of generating NO_x and
 2 PM10 in excess of local air district regional thresholds would therefore violate applicable air quality
 3 standards in the study area and could contribute to or worsen an existing air quality conditions. This
 4 would be a significant impact. Mitigation Measures AQ-1a and AQ-1b would be available to reduce
 5 NO_x and PM10 emissions to a less-than-significant level by offsetting emissions to quantities below
 6 YSAQMD CEQA thresholds (see Table 22-8).

7 **Mitigation Measure AQ-1a: Mitigate and Offset Construction-Generated Criteria Pollutant**
 8 **Emissions within the SFNA to Net Zero (0) for Emissions in Excess of General Conformity**
 9 ***De Minimis* Thresholds (Where Applicable) and to Quantities below Applicable CEQA**
 10 **Thresholds for Other Pollutants**

11 Please see Mitigation Measure AQ-1a under Impact AQ-1 in the discussion of Alternative 1A.

12 **Mitigation Measure AQ-1b: Develop an Alternative or Complementary Offsite Mitigation**
 13 **Program to Mitigate and Offset Construction-Generated Criteria Pollutant Emissions**
 14 **within the SFNA to Net Zero (0) for Emissions in Excess of General Conformity *De Minimis***
 15 **Thresholds (Where Applicable) and to Quantities below Applicable CEQA Thresholds for**
 16 **Other Pollutants**

17 Please see Mitigation Measure AQ-1b under Impact AQ-1 in the discussion of Alternative 1A.

18 **Impact AQ-3: Generation of Criteria Pollutants in Excess of the BAAQMD Regional Thresholds**
 19 **during Construction of the Proposed Water Conveyance Facility**

20 ***NEPA Effects:*** As shown in Table 22-12, construction emissions would exceed BAAQMD's daily
 21 thresholds for the following pollutants and years, even with implementation of environmental
 22 commitments (see Appendix 3B, *Environmental Commitments*). All other pollutants would be below
 23 air district thresholds and therefore would not result in an adverse air quality effect.

- 24 • ROG: 2023–2027
- 25 • NO_x: 2018–2029

26 Since ROG and NO_x are precursors to ozone and NO_x is a precursor to PM, exceedances of BAAQMD's
 27 ROG and NO_x thresholds could impact both regional ozone and PM formation, which could worsen
 28 regional air quality and air basin attainment of the NAAQS and CAAQS.

29 While equipment could operate at any work area identified for this alternative, the highest level of
 30 ROG and NO_x emissions in the BAAQMD are expected to occur at those sites where the duration and
 31 intensity of construction activities would be greatest, including the site of the Byron Tract Forebay
 32 adjacent to and south of Clifton Court Forebay.

33 Environmental commitments outlined in Appendix 3B, *Environmental Commitments*, will reduce
 34 construction-related emissions; however, as shown in Table 22-12, ROG and NO_x emissions would
 35 still exceed the applicable BAAQMD thresholds identified in Table 22-8 and result in an adverse
 36 regional effect to air quality. Mitigation Measures AQ-3a and AQ-3b are available to reduce ROG and
 37 NO_x emissions, and would thus address regional effects related to secondary ozone and PM
 38 formation.

39 ***CEQA Conclusion:*** Emissions of ROG and NO_x generated during construction would exceed
 40 BAAQMD's regional thresholds identified in Table 22-8. Since ROG and NO_x are precursors to ozone

1 and NO_x is a precursor to PM, exceedances of BAAQMD's ROG and NO_x thresholds could impact both
 2 regional ozone and PM formation. The BAAQMD's regional emissions thresholds (Table 22-8) have
 3 been adopted to ensure projects do not hinder attainment of the CAAQS or NAAQS. The impact of
 4 generating ROG and NO_x in excess of local air district regional thresholds would therefore violate
 5 applicable air quality standards in the study area and could contribute to or worsen an existing air
 6 quality conditions. This would be a significant impact. Mitigation Measures AQ-3a and AQ-3b would
 7 be available to reduce ROG and NO_x emissions to a less-than-significant level by offsetting emissions
 8 to quantities below BAAQMD CEQA thresholds (see Table 22-8).

9 **Mitigation Measure AQ-3a: Mitigate and Offset Construction-Generated Criteria Pollutant**
 10 **Emissions within BAAQMD/SFBAAB to Net Zero (0) for Emissions in Excess of General**
 11 **Conformity *De Minimis* Thresholds (Where Applicable) and to Quantities below**
 12 **Applicable BAAQMD CEQA Thresholds for Other Pollutants¹⁸**

13 DWR will reduce criteria pollutant emissions generated by the construction of the water
 14 conveyance facilities associated with BDCP within the BAAQMD through the creation of
 15 offsetting reductions of emissions occurring within the SFBAAB. The preferred means of
 16 undertaking such offsite mitigation shall be through a partnership with the BAAQMD involving
 17 the payment of offsite mitigation fees. Criteria pollutants in excess of the federal *de minimis*
 18 thresholds shall be reduced to net zero (0) (see Table 22-9). Criteria pollutants not in excess of
 19 the *de minimis* thresholds, but above any applicable air pollution control or air quality
 20 management district CEQA thresholds¹⁹ shall be reduced to quantities below the numeric
 21 thresholds (see Table 22-8).

22 DWR will undertake in good faith an effort to enter into a development mitigation contract with
 23 BAAQMD in order to reduce criteria pollutant emissions generated by the construction of the
 24 water conveyance facilities associated with BDCP within the BAAQMD. The preferred source of
 25 emissions reductions for NO_x, ROG, and PM shall be through contributions to BAAQMD's Carl
 26 Moyer Program and/or other BAAQMD incentive programs (e.g., TFCA).

27 If DWR is successful in reaching what it regards as a satisfactory agreement with BAAQMD, DWR
 28 will enter into mitigation contracts with BAAQMD to reduce NO_x, PM, or ROG (as appropriate)
 29 emissions to the required levels. Such reductions may occur within the SFBAAB. The required
 30 levels are:

- 31 • For emissions in excess of the federal *de minimis* threshold: **net zero (0)** (see Table 22-9).
- 32 • For emissions not in excess of *de minimis* thresholds but above the appropriate BAAQMD
 33 standards: **below the appropriate CEQA threshold levels** (see Table 22-8).

34 Implementation of this mitigation would require DWR adopt the following specific
 35 responsibilities.

¹⁸ In the title of this mitigation measure, the phrase "for other pollutants" is intended to apply to other alternatives, where associated impacts to other pollutants may exceed thresholds other than NO_x.

¹⁹ For example, NO_x emissions in a certain year may exceed BAAQMD's 54 pound per day CEQA threshold, but not the 100 ton annual *de minimis* threshold. According to Appendix G of the State CEQA Guidelines, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make determinations regarding the significance of an impact.

- 1 ● Consult with the BAAQMD in good faith with the intention of entering into a mitigation
2 contract with BAAQMD for the Carl Moyer Program and/or other BAAQMD emission
3 reduction incentive program. For SIP purposes, the necessary reductions must be achieved
4 (contracted and delivered) by the applicable year in question (i.e., emissions generated in
5 year 2016 would need to be reduced offsite in 2016). Funding would need to be received
6 prior to contracting with participants and should allow sufficient time to receive and
7 process applications to ensure offsite reduction projects are funded and implemented prior
8 to commencement of BDCP activities being reduced. In negotiating the terms of the
9 mitigation contract, DWR and BAAQMD should seek clarification and agreement on
10 BAAQMD responsibilities, including the following.
- 11 ○ Identification of appropriate offsite mitigation fees required for BDCP.
12 ○ Timing required for obtaining necessary offsite emission credits.
13 ○ Processing of mitigation fees paid by DWR.
14 ○ Verification of emissions inventories submitted by DWR.
15 ○ Verification that offsite fees are applied to appropriate mitigation programs within the
16 SFBAAB.
- 17 ● Quantify mitigation fees required to satisfy the appropriate reductions. Funding for the
18 emission reduction projects will be provided in an amount up to the emission reduction
19 project cost-effectiveness limit set by for the Carl Moyer Program during the year that the
20 emissions from construction are emitted. (The current emissions limit is \$17,720 / weighted
21 ton of criteria pollutants [NO_x + ROG + (20*PM)]). An administrative fee of 5% would be
22 paid by DWR to the BAAQMD to implement the program. The funding would be used to fund
23 projects eligible for funding under the Carl Moyer Program guidelines or other BAAQMD
24 emission reduction incentive program meeting the same cost-effectiveness threshold that
25 are real, surplus, quantifiable, and enforceable.
- 26 ● Develop a compliance program to calculate emissions and collect fees from the construction
27 contractors for payment to BAAQMD. The program will require, as a standard or
28 specification of their construction contracts with DWR, that construction contractors
29 identify construction emissions and their share of required offsite fees, if applicable. Based
30 on the emissions estimates, DWR will collect fees from the individual construction
31 contractors (as applicable) for payment to BAAQMD. Construction contractors will have the
32 discretion to reduce their construction emissions to the lowest possible level through
33 additional onsite mitigation, as the greater the emissions reductions that can be achieved by
34 onsite mitigation, the lower the required offsite fee. Acceptable options for reducing
35 emissions may include use of late-model engines, low-emission diesel products, additional
36 electrification or alternative fuels, engine-retrofit technology, and/or after-treatment
37 products. All control strategies must be verified by BAAQMD.
- 38 ● Conduct daily and annual emissions monitoring to ensure onsite emissions reductions are
39 achieved and no additional mitigation payments are required. Excess offsite funds can be
40 carried from previous to subsequent years in the event that additional reductions are
41 achieved by onsite mitigation. At the end of the project, if it is determined that excess offset
42 funds remain (outstanding contracts and administration over the final years of the contracts
43 will be taken into consideration), BAAQMD and DWR shall determine the disposition of final

1 funds (e.g., additional emission reduction projects to offset underperforming contracts,
2 return of funds to DWR, etc.).

3 If a sufficient number of emissions reduction projects are not identified to meet the required
4 performance standard, the DWR will coordinate with BAAQMD to ensure the performance
5 standards of achieving net zero (0) for emissions in excess of General Conformity *de minimis*
6 thresholds (where applicable) and of achieving quantities below applicable BAAQMD CEQA
7 thresholds for other pollutants not in excess of the *de minimis* thresholds but above BAAQMD
8 CEQA thresholds are met.

9 **Mitigation Measure AQ-3b: Develop an Alternative or Complementary Offsite Mitigation**
10 **Program to Mitigate and Offset Construction-Generated Criteria Pollutant Emissions**
11 **within the BAAQMD/SFBAAB to Net Zero (0) for Emissions in Excess of General**
12 **Conformity *De Minimis* Thresholds (Where Applicable) and to Quantities below**
13 **Applicable BAAQMD CEQA Thresholds for Other Pollutants**

14 Should DWR be unable to enter into what they regard as a satisfactory agreement with BAAQMD
15 as contemplated by Mitigation Measure AQ-3a, or should DWR enter into an agreement with
16 BAAQMD but find themselves unable to meet the performance standards set forth in Mitigation
17 Measure AQ-3a, DWR will develop an alternative or complementary offsite mitigation program
18 to reduce criteria pollutant emissions generated by the construction of the water conveyance
19 facilities associated with BDCP. The offsite mitigation program will offset criteria pollutant
20 emissions to the required levels identified in Mitigation Measure AQ-3a. Accordingly, the
21 program will ensure that the project does not contribute to or worsen existing air quality
22 exceedances. Whether this program will address emissions beyond NO_x, PM, or ROG, will turn
23 on whether DWR has achieved sufficient reductions of those pollutants pursuant to Mitigation
24 Measure AQ-3a.

25 The offsite mitigation program will establish a program to fund emission reduction projects
26 through grants and similar mechanisms. All projects must provide contemporaneous (occur in
27 the same calendar year as the emission increases) and localized (i.e., within the SFBAAB)
28 emissions benefit to the area of effect. DWR may identify emissions reduction projects through
29 consultation with BAAQMD and ARB, as needed. Potential projects could include, but are not
30 limited to the following.

- 31 ● Alternative fuel, low-emission school buses, transit buses, and other vehicles.
- 32 ● Diesel engine retrofits and repowers.
- 33 ● Locomotive retrofits and repowers.
- 34 ● Electric vehicle or lawn equipment rebates.
- 35 ● Electric vehicle charging stations and plug-ins.
- 36 ● Video-teleconferencing systems for local businesses.
- 37 ● Telecommuting start-up costs for local businesses.

38 As part of its alternative or complementary offsite mitigation program, DWR will develop
39 pollutant-specific formulas to monetize, calculate, and achieve emissions reductions in a cost-
40 effective manner. Construction contractors, as a standard specification of their construction
41 contracts with DWR, will identify construction emissions and their share of required offset fees.

1 DWR will verify the emissions estimates submitted by the construction contractors and
 2 calculate the required fees. Construction contractors (as applicable) will be required to
 3 surrender required fees to DWR prior to the start of construction. Construction contractors will
 4 have the discretion to reduce their construction emissions to the lowest possible level through
 5 additional onsite mitigation, as the greater the emissions reductions that can be achieved by
 6 onsite mitigation, the lower the required offset fee. Acceptable options for reducing emissions
 7 may include, but are not limited to, the use of late-model engines, low-emission diesel products,
 8 additional electrification or alternative fuels, engine-retrofit technology, and/or after-treatment
 9 products. All control strategies must be verified by BAAQMD, the ARB, or by a qualified air
 10 quality expert employed by or retained by DWR.

11 The offsite fee, grant, or other mechanism will be calculated or formulated based on the actual
 12 cost of pollutant reductions. No collected offset fees will be used to cover administrative costs;
 13 offset fees or other payments are strictly limited to procurement of offsite emission reductions.
 14 Fees or other payments collected by DWR will be allocated to emissions reductions projects in a
 15 grant-like manner. DWR shall document the fee schedule basis, such as consistency with the
 16 ARB's Carl Moyer Program cost-effectiveness limits and capital recovery factors.

17 DWR will conduct annual reporting to verify and document that emissions reductions projects
 18 achieve a 1:1 reduction with construction emissions to ensure claimed offsets meet the required
 19 performance standard. All offsite reductions must be quantifiable, verifiable, enforceable, and
 20 satisfy the basic criterion of additionally (i.e., the reductions would not happen without the
 21 financial support of purchased offset credits). Annual reports will include, at a minimum the
 22 following components.

- 23 ● Total amount of offset fees received.
- 24 ● Total fees distributed to offsite projects.
- 25 ● Total fees remaining.
- 26 ● Projects funded and associated pollutant reductions realized.
- 27 ● Total emission reductions realized.
- 28 ● Total emissions reductions remaining to satisfy the requirements of Mitigation Measure AQ-
 29 3b.
- 30 ● Overall cost-effectiveness of the projects funded.

31 If a sufficient number of emissions reduction projects are not identified to meet the required
 32 performance standard, DWR will consult with BAAQMD, the ARB, or a qualified air quality
 33 expert employed by or retained by DWR to ensure conformity is met through some other means
 34 of achieving the performance standards of achieving net zero (0) for emissions in excess of
 35 General Conformity *de minimis* thresholds (where applicable) and of achieving quantities below
 36 applicable BAAQMD CEQA thresholds for other pollutants.

37 **Impact AQ-4: Generation of Criteria Pollutants in Excess of the SJVAPCD Regional Thresholds** 38 **during Construction of the Proposed Water Conveyance Facility**

39 **NEPA Effects:** As shown in Table 22-12, construction emissions would exceed SJVAPCD's annual
 40 thresholds for the following pollutants and years, even with implementation of environmental

1 commitments (see Appendix 3B, *Environmental Commitments*). All other pollutants would be below
2 air district thresholds and therefore would not result in an adverse air quality effect.

- 3 • ROG: 2019–2025
- 4 • NO_x: 2019–2026
- 5 • PM10: 2019–2024

6 Since ROG and NO_x are precursors to ozone and NO_x is a precursor to PM, exceedances of SJVAPCD's
7 ROG and NO_x thresholds could impact both regional ozone and PM formation, which could worsen
8 regional air quality and air basin attainment of the NAAQS and CAAQS. Similarly, exceedances of
9 SJVAPCD's PM10 threshold could impede attainment of the NAAQS and CAAQS for PM10.

10 While equipment could operate at any work area identified for this alternative, the highest level of
11 ROG, NO_x, and PM10 emissions in the SJVAPCD is expected to occur at those sites where the
12 duration and intensity of construction activities would be greatest. This includes all temporary and
13 permanent utility sites, as well as all construction sites along the pipeline/tunnel conveyance
14 alignment. For a map of the proposed tunnel alignment, see Mapbook Figure M3-1.

15 Environmental commitments outlined in Appendix 3B, *Environmental Commitments* will reduce
16 construction-related emissions; however, as shown in Table 22-12, ROG, NO_x, and PM10 emissions
17 would still exceed the applicable SJVAPCD thresholds identified in Table 22-8 and result in an
18 adverse regional effect to air quality. Mitigation Measures AQ-4a and AQ-4b are available to reduce
19 ROG, NO_x, and PM10 emissions, and would thus address regional effects related to secondary ozone
20 and PM formation.

21 **CEQA Conclusion:** Emissions of ROG, NO_x, and PM10 generated during construction would exceed
22 SJVAPCD's annual regional threshold identified in Table 22-8. Since ROG and NO_x are precursors to
23 ozone and NO_x is a precursor to PM, exceedances of SJVAPCD's ROG and NO_x thresholds could
24 impact both regional ozone and PM formation, which could worsen regional air quality and air basin
25 attainment of the NAAQS and CAAQS. Similarly, exceedances of SJVAPCD's PM10 threshold could
26 impede attainment of the NAAQS and CAAQS for PM10. SJVAPCD's regional emissions thresholds
27 (Table 22-8) have been adopted to ensure projects do not hinder attainment of the CAAQS for ozone
28 and PM. The impact of generating ROG, NO_x, and PM10 in excess of local air district thresholds
29 would therefore violate applicable air quality standards in the study area and could contribute to or
30 worsen an existing air quality conditions. This would be a significant impact. Mitigation Measures
31 AQ-4a and AQ-4b would be available to reduce ROG, NO_x, and PM10 emissions to a less-than-
32 significant level by offsetting emissions to quantities below SJVAPCD CEQA threshold (see Table 22-
33 8).

1 **Mitigation Measure AQ-4a: Mitigate and Offset Construction-Generated Criteria Pollutant**
 2 **Emissions within SJVAPCD/SJVAB to Net Zero (0) for Emissions in Excess of General**
 3 **Conformity *De Minimis* Thresholds (Where Applicable) and to Quantities below**
 4 **Applicable SJVAPCD CEQA Thresholds for Other Pollutants²⁰**

5 DWR will reduce criteria pollutant emissions generated by the construction of the water
 6 conveyance facilities associated with BDCP within the SJVAPCD through the creation of
 7 offsetting reductions of emissions occurring within the SJVAB. The preferred means of
 8 undertaking such offsite mitigation shall be through a partnership with the SJVAPCD involving
 9 the payment of offsite mitigation fees. Criteria pollutants in excess of the federal *de minimis*
 10 thresholds shall be reduced to net zero (0) (see Table 22-9). Criteria pollutants not in excess of
 11 the *de minimis* thresholds, but above any applicable air pollution control or air quality
 12 management district CEQA thresholds²¹ shall be reduced to quantities below the numeric
 13 thresholds (see Table 22-8).²²

14 DWR will undertake in good faith an effort to enter into a development mitigation contract with
 15 SJVAPCD in order to reduce criteria pollutant emissions generated by the construction of the
 16 water conveyance facilities associated with BDCP within the SJVAPCD. The preferred source of
 17 emissions reductions for NO_x, PM, and ROG shall be through contributions to SJVAPCD's VERA.
 18 The VERA is implemented through the District Incentive Programs and is a measure to reduce
 19 project impacts under CEQA. The current VERA payment fee for construction emissions is
 20 \$9,350 per ton of NO_x and \$9,011 per ton of PM₁₀. This is an estimated cost and may change in
 21 the future (e.g., future year payment fees for NO_x could be in excess of the current price of
 22 \$9,350) and are sensitive to the number and type of projects requiring emission reductions
 23 within the same air basin (Siong pers. comm. 2012).

24 If DWR is successful in reaching what it regards as a satisfactory agreement with SJVAPCD, DWR
 25 will enter into mitigation contracts with SJVAPCD to reduce NO_x, PM, or ROG (as appropriate)
 26 emissions to the required levels. Such reductions must occur within the SJVAB. required levels
 27 are:

- 28 • For emissions in excess of the federal *de minimis* threshold: **net zero (0)**.
- 29 • For emissions not in excess of *de minimis* thresholds but above the SJVAPCD's standards:
 30 **below the appropriate CEQA threshold levels.**

31 Implementation of this measure would require DWR to adopt the following specific
 32 responsibilities.

- 33 • Consult with the SJVAPCD in good faith with the intention of entering into a mitigation
 34 contract with SJVAPCD for the VERA. For SIP purposes, the necessary reductions must be

²⁰ In the title of this mitigation measure, the phrase "for other pollutants" is intended to apply to other alternatives, where associated impacts to other pollutants may exceed thresholds other than NO_x.

²¹ For example, PM₁₀ emissions in a certain year may exceed SJVAPCD's 15 ton annual CEQA threshold, but not the 100 ton annual *de minimis* threshold. According to Appendix G of the State CEQA Guidelines, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make determinations regarding the significance of an impact.

²² For example, emissions of NO_x generated by Alternative 1A both exceed the federal *de minimis* threshold for the SJVAB and the SJVAPCD's CEQA threshold. NO_x emissions must therefore be reduced to net zero (0).

1 achieved (contracted and delivered) by the applicable year in question (i.e., emissions
 2 generated in year 2016 would need to be reduced offsite in 2016). Funding would need to
 3 be received prior to contracting with participants and should allow sufficient time to receive
 4 and process applications to ensure offsite reduction projects are funded and implemented
 5 prior to commencement of BDCP activities being reduced. This would roughly equate to the
 6 equivalent of two months (2) prior to groundbreaking; additional lead time may be
 7 necessary depending on the level of offsite emission reductions required for a specific year.
 8 In negotiating the terms of the mitigation contract, DWR and SJVAPCD should seek
 9 clarification and agreement on SJVAPCD responsibilities, including the following.

- 10 ○ Identification of appropriate offsite mitigation fees required for BDCP.
- 11 ○ Processing of mitigation fees paid by DWR.
- 12 ○ Verification of emissions inventories submitted by DWR
- 13 ○ Verification that offsite fees are applied to appropriate mitigation programs within the
 14 SJVAB.
- 15 ● Quantify mitigation fees required to satisfy the appropriate reductions. An administrative
 16 fee of 4% would be paid by DWR to the SJVAPCD to implement the program. As noted above,
 17 the payment fees may vary by year and are sensitive to the number of projects requiring
 18 reductions within the SJVAB.
- 19 ● Develop a compliance program to calculate emissions and collect fees from the construction
 20 contractors for payment to SJVAPCD. The program will require, as a standard or
 21 specification of their construction contracts with DWR, that construction contractors
 22 identify construction emissions and their share of required offsite fees, if applicable. Based
 23 on the emissions estimates, DWR will collect fees from the individual construction
 24 contractors (as applicable) for payment to SJVAPCD. Construction contractors will have the
 25 discretion to reduce their construction emissions to the lowest possible level through
 26 additional onsite mitigation, as the greater the emissions reductions that can be achieved by
 27 onsite mitigation, the lower the required offsite fee. Acceptable options for reducing
 28 emissions may include use of late-model engines, low-emission diesel products, additional
 29 electrification or alternative fuels, engine-retrofit technology, and/or after-treatment
 30 products. All control strategies must be verified by SJVAPCD.
- 31 ● Conduct daily and annual emissions monitoring to ensure onsite emissions reductions are
 32 achieved and no additional mitigation payments are required. Excess offsite funds can be
 33 carried from previous to subsequent years in the event that additional reductions are
 34 achieved by onsite mitigation. At the end of the project, if it is determined that excess offset
 35 funds remain (outstanding contracts and administration over the final years of the contracts
 36 will be taken into consideration), SJVAPCD and DWR shall determine the disposition of final
 37 funds (e.g., additional emission reduction projects to offset underperforming contracts,
 38 return of funds to DWR, etc.).

39 If a sufficient number of emissions reduction projects are not identified to meet the required
 40 performance standard, DWR will coordinate with SJVAPCD to ensure the performance standards
 41 of achieving net zero (0) for emissions in excess of General Conformity *de minimis* thresholds
 42 (where applicable) and of achieving quantities below applicable SJVAPCD CEQA thresholds for
 43 other pollutants not in excess of the *de minimis* thresholds but above SJVAPCD CEQA thresholds
 44 are met.

Mitigation Measure AQ-4b: Develop an Alternative or Complementary Offsite Mitigation Program to Mitigate and Offset Construction-Generated Criteria Pollutant Emissions within the SJVAPCD/SJVAB to Net Zero (0) for Emissions in Excess of General Conformity *De Minimis* Thresholds (Where Applicable) and to Quantities below Applicable SJVAPCD CEQA Thresholds for Other Pollutants

Should DWR be unable to enter into what they regard as a satisfactory agreement with SJVAPCD as contemplated by Mitigation Measure AQ-4a, or should DWR enter into an agreement with SJVAPCD but find themselves unable to meet the performance standards set forth in Mitigation Measure AQ-4a, DWR will develop an alternative or complementary offsite mitigation program to reduce criteria pollutant emissions generated by the construction of the water conveyance facilities associated with BDCP. The offsite mitigation program will offset criteria pollutant emissions to the required levels identified in Mitigation Measure AQ-4a. Accordingly, the program will ensure that the project does not contribute to or worsen existing air quality exceedances. Whether this program will address emissions beyond NO_x, PM, or ROG, will turn on whether DWR has achieved sufficient reductions of those pollutants pursuant to Mitigation Measure AQ-4a.

The offsite mitigation program will establish a program to fund emission reduction projects through grants and similar mechanisms. All projects must provide contemporaneous (occur in the same calendar year as the emission increases) and localized (i.e., within the SJVAB) emissions benefit to the area of effect. DWR may identify emissions reduction projects through consultation with SJVAPCD and ARB, as needed. Potential projects could include, but are not limited to the following.

- Alternative fuel, low-emission school buses, transit buses, and other vehicles.
- Diesel engine retrofits and repowers.
- Locomotive retrofits and repowers.
- Electric vehicle or lawn equipment rebates.
- Electric vehicle charging stations and plug-ins.
- Video-teleconferencing systems for local businesses.
- Telecommuting start-up costs for local businesses.

As part of its alternative or complementary offsite mitigation program, DWR will develop pollutant-specific formulas to monetize, calculate, and achieve emissions reductions in a cost-effective manner. Construction contractors, as a standard specification of their construction contracts with DWR, will identify construction emissions and their share of required offset fees. DWR will verify the emissions estimates submitted by the construction contractors and calculate the required fees. Construction contractors (as applicable) will be required to surrender required fees to DWR prior to the start of construction. Construction contractors will have the discretion to reduce their construction emissions to the lowest possible level through additional onsite mitigation, as the greater the emissions reductions that can be achieved by onsite mitigation, the lower the required offset fee. Acceptable options for reducing emissions may include, but are not limited to, the use of late-model engines, low-emission diesel products, additional electrification or alternative fuels, engine-retrofit technology, and/or after-treatment products. All control strategies must be verified by SJVAPCD, the ARB, or by a qualified air quality expert employed by or retained by DWR.

1 The offsite fee, grant, or other mechanism will be calculated or formulated based on the actual
 2 cost of pollutant reductions. No collected offset fees will be used to cover administrative costs;
 3 offset fees or other payments are strictly limited to procurement of offsite emission reductions.
 4 Fees or other payments collected by DWR will be allocated to emissions reductions projects in a
 5 grant-like manner. DWR shall document the fee schedule basis, such as consistency with the
 6 ARB's Carl Moyer Program cost-effectiveness limits and capital recovery factors.

7 DWR will conduct annual reporting to verify and document that emissions reductions projects
 8 achieve a 1:1 reduction with construction emissions to ensure claimed offsets meet the required
 9 performance standard. All offsite reductions must be quantifiable, verifiable, enforceable, and
 10 satisfy the basic criterion of additionally (i.e., the reductions would not happen without the
 11 financial support of purchased offset credits). Annual reports will include, at a minimum the
 12 following components.

- 13 ● Total amount of offset fees received.
- 14 ● Total fees distributed to offsite projects.
- 15 ● Total fees remaining.
- 16 ● Projects funded and associated pollutant reductions realized.
- 17 ● Total emission reductions realized.
- 18 ● Total emissions reductions remaining to satisfy the requirements of Mitigation Measure AQ-
 19 4b.
- 20 ● Overall cost-effectiveness of the projects funded.

21 If a sufficient number of emissions reduction projects are not identified to meet the required
 22 performance standard, DWR will consult with SJVAPCD, the ARB, or a qualified air quality expert
 23 employed by or retained by DWR to ensure conformity is met through some other means of
 24 achieving the performance standards of achieving net zero (0) for emissions in excess of General
 25 Conformity *de minimis* thresholds (where applicable) and of achieving quantities below
 26 applicable SJVAPCD CEQA thresholds for other pollutants.

27 **Impact AQ-5: Generation of Criteria Pollutants in Excess of the SMAQMD Regional Thresholds** 28 **from Operation and Maintenance of the Proposed Water Conveyance Facility**

29 **NEPA Effects:** Operations and maintenance in SMAQMD could include both routine activities and
 30 yearly maintenance. Daily activities at all pumping plants and intakes are covered by maintenance,
 31 management, repair, and operating crews. Yearly maintenance would include annual inspections, as
 32 well as tunnel dewatering and sediment removal (see Appendix 22A, *Air Quality Analysis*
 33 *Methodology*, for additional detail). The highest concentration of operational emissions in the
 34 SMAQMD are expected at intake and intake pumping plant sites along the east bank of the
 35 Sacramento River, as well as at the intermediate forebay (and pumping plant) site west of South
 36 Stone Lake and east of the Sacramento River. As shown in Table 22-13, operation and maintenance
 37 activities under Alternative 1A would not exceed SMAQMD's regional thresholds of significance (see
 38 Table 22-8). Accordingly, project operations would not contribute to or worsen existing air quality
 39 exceedances. There would be no adverse effect.

40 **CEQA Conclusion:** Emissions generated during operation and maintenance activities would not
 41 exceed SMAQMD regional thresholds for criteria pollutants. The SMAQMD's regional emissions

1 thresholds (Table 22-8) have been adopted to ensure projects do not hinder attainment of the
2 CAAQS. The impact of generating emissions in excess of local air district would therefore violate
3 applicable air quality standards in the study area and could contribute to or worsen an existing air
4 quality conditions. Because project operations would not exceed SMAQMD regional thresholds, the
5 impact would be less than significant. No mitigation is required.

6 **Impact AQ-6: Generation of Criteria Pollutants in Excess of the YSAQMD Regional Thresholds**
7 **from Operation and Maintenance of the Proposed Water Conveyance Facility**

8 *NEPA Effects:* Alternative 1A would not involve the construction of any permanent features in the
9 YSAQMD that would require routine operations and maintenance. No operational emissions would
10 be generated in the YSAQMD. Consequently, operation of Alternative 1A would neither exceed the
11 YSAQMD thresholds of significance nor result in an adverse effect on air quality.

12 *CEQA Conclusion:* No operational or maintenance emissions generated by the alternative would
13 occur in YSAQMD and, therefore, YSAQMD's regional thresholds would not be exceeded (see Table
14 22-8). This impact would be less than significant. No mitigation is required.

15 **Impact AQ-7: Generation of Criteria Pollutants in Excess of the BAAQMD Regional Thresholds**
16 **from Operation and Maintenance of the Proposed Water Conveyance Facility**

17 *NEPA Effects:* Operations and maintenance in BAAQMD could include annual inspections, as well as
18 tunnel dewatering and sediment removal (see Appendix 22A, *Air Quality Analysis Methodology*, for
19 additional detail). The highest concentration of operational emissions in the BAAQMD are expected
20 at the Byron Tract Forebay (including control gates), which is adjacent to and south of Clifton Court
21 Forebay. As shown in Table 22-13, operation and maintenance activities under Alternative 1A would
22 not exceed BAAQMD's regional thresholds of significance (see Table 22-8). Thus, project operations
23 would not contribute to or worsen existing air quality exceedances. There would be no adverse
24 effect.

25 *CEQA Conclusion:* Emissions generated during operation and maintenance activities would not
26 exceed BAAQMD regional thresholds for criteria pollutants. The BAAQMD's regional emissions
27 thresholds (Table 22-8) have been adopted to ensure projects do not hinder attainment of the
28 CAAQS. The impact of generating emissions in excess of local air district thresholds would violate
29 applicable air quality standards in the study area and could contribute to or worsen an existing air
30 quality conditions. Because project operations would not exceed BAAQMD regional thresholds, the
31 impact would be less than significant. No mitigation is required.

32 **Impact AQ-8: Generation of Criteria Pollutants in Excess of the SJVAPCD Regional Thresholds**
33 **from Operation and Maintenance of the Proposed Water Conveyance Facility**

34 *NEPA Effects:* Operations and maintenance in SJVAPCD could include annual inspections, tunnel
35 dewatering, and sediment removal (see Appendix 22A, *Air Quality Analysis Methodology*, for
36 additional detail). The highest concentration of operational emissions in the SJVAPCD is expected at
37 routine inspection sites along the pipeline/tunnel conveyance alignment. For a map of the proposed
38 tunnel alignment, see Mapbook Figure M3-1. As shown in Table 22-13, operation and maintenance
39 activities under Alternative 1A would not exceed SJVAPCD's regional thresholds of significance (see
40 Table 22-8). Accordingly, project operations would not contribute to or worsen existing air quality
41 exceedances. There would be no adverse effect.

CEQA Conclusion: Emissions generated during operation and maintenance activities would not exceed SJVAPCD's regional thresholds of significance. The SJVAPCD's regional emissions thresholds (Table 22-8) have been adopted to ensure projects do not hinder attainment of the CAAQS. The impact of generating emissions in excess of local air district thresholds would violate applicable air quality standards in the Study area and could contribute to or worsen an existing air quality conditions. Because project operations would not exceed SJVAPCD regional thresholds, the impact would be less than significant. No mitigation is required. **Impact AQ-9: Exposure of Sensitive Receptors to Health Hazards from Localized Particulate Matter in Excess of SMAQMD's Health-Based Concentration Thresholds**

NEPA Effects: Respirable particulates pose a public health threat by bypassing the defenses within the mucous ciliary system and entering deep lung tissue. Particulates are derived from a variety of sources, including windblown dust and fuel combustion. As shown in Table 22-12, construction would increase PM10 and PM2.5 emissions in SMAQMD, which may pose inhalation-related health risks for receptors exposed to certain concentrations.

PM2.5 and PM10 concentrations at sensitive receptors locations were assessed using the EPA's AERMOD dispersion. The methodology described in Section 22.3.1.3 provides a more detailed summary of the approach used to conduct the analysis. Appendix 22C, *Bay Delta Conservation Plan Air Dispersion Modeling and Health Risk Assessment for Construction Emissions*, provides an in-depth discussion of the methodology and results.

Table 22-14 shows the highest predicted annual and daily (24-hour) PM10 and PM2.5 concentrations in SMAQMD. Exceedances of air district thresholds are shown in underline.

Table 22-14. Alternative 1A PM10 and PM2.5 Concentration Results in SMAQMD

Parameter	PM10		PM2.5	
	Annual ($\mu\text{g}/\text{m}^3$)	24-Hour ($\mu\text{g}/\text{m}^3$)	Annual ($\mu\text{g}/\text{m}^3$)	24-Hour ($\mu\text{g}/\text{m}^3$)
Maximum Value	0.5	<u>11.0</u>	0.09	1.7
<i>SMAQMD Threshold</i>	<i>1</i>	<i>2.5</i>	<i>0.6</i>	-

Appendix 22C, *Bay Delta Conservation Plan Air Dispersion Modeling and Health Risk Assessment for Construction Emissions*, includes modeling results for all receptors.
 $\mu\text{g}/\text{m}^3$ = micrograms per cubic meter

All estimated annual PM10 and PM2.5 concentrations would be less than SMAQMD's annual thresholds. However, as shown in Table 22-14, the maximum predicted 24-hour PM10 concentration exceeds SMAQMD's threshold of 2.5 $\mu\text{g}/\text{m}^3$. Exceedances of the threshold would occur at 225 receptor locations near intakes and the intake work areas. The exceedances would be temporary and occur intermittently due to soil disturbance (primarily entrained road dust).

DWR has identified several environmental commitments to reduce construction-related particulate matter in the SMAQMD (see Appendix 3B, *Environmental Commitments*). Consistent with air district guidance, these commitments constitute mitigation measures which include implementation of all feasible onsite fugitive dust controls, such as regular watering. While these commitments will reduce localized particulate matter emissions, concentrations at adjacent receptor locations would still exceed SMAQMD's 24-hour PM10 threshold. Receptors exposed to PM10 concentrations in excess of SMAQMD's threshold could experience increased risk for adverse human health effects. Mitigation Measure AQ-9 is available to address this effect.

1 **CEQA Conclusion:** Respirable particulates pose a human health hazard by bypassing the defenses
 2 within the mucous ciliary system and entering deep lung tissue. Construction of Alternative 1A
 3 would result in the short-term exposure of sensitive receptors to annual concentrations of PM_{2.5}
 4 that are below the significance thresholds established by the SMAQMD. Accordingly, no significant
 5 localized impact would occur with respect to PM_{2.5}.

6 A total of 225 receptor locations would be exposed to 24-hour PM₁₀ concentrations that exceed
 7 SMAQMD's threshold. This is a significant impact. The exceedances would occur intermittently due
 8 to soil disturbance and during days with most intensive construction activities. The significant
 9 impacts at the receptor locations are therefore temporary.

10 Mitigation Measure AQ-9 outlines a tiered strategy to reduce PM concentrations and public exposure
 11 to significant health hazards. Specifically, DWR will utilize dust suppressants (Pennzsuppress) on all
 12 unpaved surfaces to control fugitive dust emissions. The suppressants would be used in place of
 13 water and have a control efficiency of approximately 85% (California Air Resources Board 2012b). If
 14 concentrations still exceed air district thresholds with application of suppressants, DWR will offer
 15 relocation assistance to affected receptors. If accepted, relocation would reduce this impact to less
 16 than significant. However, if landowners choose not to accept DWR's offer of relocation assistance,
 17 DWR will pave all areas in which vehicles travel. Paving roadways would reduce entrained road dust
 18 by approximately 99% (Countess Environmental 2006). PM concentrations with implementation of
 19 Mitigation Measure AQ-9 would be reduced to a less-than-significant level.

20 **Mitigation Measure AQ-9: Implement Measures to Reduce Re-Entrained Road Dust and**
 21 **Receptor Exposure to PM_{2.5} and PM₁₀**

22 The project sponsor (DWR) would employ a tiered approach to reduce re-entrained road dust
 23 and receptor exposure to PM_{2.5} and PM₁₀. The approach would be taken in following way:

- 24 • PM₁₀ that could exceed the threshold at sensitive receptors will be further reduced by
 25 applying dust suppressants (Pennzsuppress);
- 26 • If additional dust suppressants eliminate the issue at all receptors no further mitigation is
 27 needed; if not, DWR will offer temporary relocation of the affected residence; if that is
 28 accepted no additional mitigation is required; if relocation is not accepted then;
- 29 • DWR will pave portions of the work sites until all exceedances are eliminated and impacts
 30 are determined to be less than significant.

31 **Impact AQ-10: Exposure of Sensitive Receptors to Health Hazards from Localized Particulate**
 32 **Matter in Excess of YSAQMD's Health-Based Concentration Thresholds**

33 **NEPA Effects:** As shown in Table 22-12, construction would increase PM₁₀ and PM_{2.5} emissions in
 34 YSAQMD, which may pose inhalation-related health risks for receptors exposed to certain
 35 concentrations.

36 PM_{2.5} and PM₁₀ concentrations at sensitive receptors locations were assessed using the EPA's
 37 AERMOD dispersion. The methodology described in Section 22.3.1.3 provides a more detailed
 38 summary of the approach used to conduct the analysis. Appendix 22C, *Bay Delta Conservation Plan*
 39 *Air Dispersion Modeling and Health Risk Assessment for Construction Emissions*, provides an in-depth
 40 discussion of the methodology and results.

1 As shown in Table 22-15, predicted PM_{2.5} and PM₁₀ concentrations are less than YSAQMD's
 2 adopted thresholds. The project would also implement all air district recommended onsite fugitive
 3 dust controls, such as regular watering. Accordingly, this alternative's effect of exposure of sensitive
 4 receptors to localized particulate matter concentrations would not be adverse.

5 **Table 22-15. Alternative 1A PM₁₀ and PM_{2.5} Concentration Results in YSAQMD**

Parameter	PM ₁₀		PM _{2.5}	
	Annual (µg/m ³)	24-Hour (µg/m ³)	Annual (µg/m ³)	24-Hour (µg/m ³)
Maximum Value	0.3	7	0.04	1
<i>YSAQMD Threshold</i>	20	50	12	35

Appendix 22C, *Bay Delta Conservation Plan Air Dispersion Modeling and Health Risk Assessment for Construction Emissions*, includes modeling results for all receptors.

µg/m³ = micrograms per cubic meter

6

7 **CEQA Conclusion:** Respirable particulates pose a human health hazard by bypassing the defenses
 8 within the mucous ciliary system and entering deep lung tissue. Construction of Alternative 1A
 9 would result in PM_{2.5} and PM₁₀ concentrations at receptor locations that are below the significance
 10 thresholds adopted by the YSAQMD. As such, localized particulate matter concentrations at analyzed
 11 receptors would not result in significant human health impacts. No mitigation is required.

12 **Impact AQ-11: Exposure of Sensitive Receptors to Health Hazards from Localized Particulate**
 13 **Matter in Excess of BAAQMD's Health-Based Concentration Thresholds**

14 **NEPA Effects:** As shown in Table 22-12, construction would increase PM₁₀ and PM_{2.5} emissions in
 15 BAAQMD, which may pose inhalation-related health risks for receptors exposed to certain
 16 concentrations.

17 PM_{2.5} and PM₁₀ concentrations at sensitive receptors locations were assessed using the EPA's
 18 AERMOD dispersion. The methodology described in Section 22.3.1.3 provides a more detailed
 19 summary of the approach used to conduct the analysis. Appendix 22C, *Bay Delta Conservation Plan*
 20 *Air Dispersion Modeling and Health Risk Assessment for Construction Emissions*, provides an in-depth
 21 discussion of the methodology and results.

22 As shown in Table 22-16, maximum predicted PM_{2.5} concentrations are less than BAAQMD's
 23 adopted threshold. The project would also implement all air-district recommended onsite fugitive
 24 dust controls, such as regular watering. Accordingly, this alternative's effect of exposure of sensitive
 25 receptors to localized particulate matter concentrations would not be adverse.

26 **Table 22-16. Alternative 1A PM₁₀ and PM_{2.5} Concentration Results in BAAQMD**

Parameter	PM ₁₀		PM _{2.5}	
	Annual (µg/m ³)	24-Hour (µg/m ³)	Annual (µg/m ³)	24-Hour (µg/m ³)
Maximum Value	0.33	31	0.07	6
<i>BAAQMD Threshold</i>	-	-	0.3	-

Appendix 22C, *Bay Delta Conservation Plan Air Dispersion Modeling and Health Risk Assessment for Construction Emissions*, includes modeling results for all receptors.

µg/m³ = micrograms per cubic meter

27

1 **CEQA Conclusion:** Respirable particulates pose a human health hazard by bypassing the defenses
 2 within the mucous ciliary system and entering deep lung tissue. Construction of Alternative 1A
 3 would result in PM_{2.5} and PM₁₀ concentrations at receptor locations that are below the significance
 4 thresholds established by the BAAQMD. As such, localized particulate matter concentrations at
 5 analyzed receptors would not result in significant human health impacts. No mitigation is required.

6 **Impact AQ-12: Exposure of Sensitive Receptors to Health Hazards from Localized Particulate**
 7 **Matter in Excess of SJVAPCD's Health-Based Concentration Thresholds**

8 **NEPA Effects:** As shown in Table 22-12, construction would increase PM₁₀ and PM_{2.5} emissions in
 9 SJVAPCD, which may pose inhalation-related health risks for receptors exposed to certain
 10 concentrations.

11 PM_{2.5} and PM₁₀ concentrations at sensitive receptors locations were assessed using the EPA's
 12 AERMOD dispersion. The methodology described in Section 22.3.1.3 provides a more detailed
 13 summary of the approach used to conduct the analysis. Appendix 22C, *Bay Delta Conservation Plan*
 14 *Air Dispersion Modeling and Health Risk Assessment for Construction Emissions*, provides an in-depth
 15 discussion of the methodology and results.

16 As shown in Table 22-17, with the exception of 24-hour PM₁₀, maximum predicted PM_{2.5} and
 17 PM₁₀ concentrations are less than SJVAPCD's adopted thresholds. The estimated 24-hour PM₁₀
 18 concentration would exceed the SJVAPCD's significance threshold at four receptor locations.
 19 Emissions from the tunnel and concrete batch plant contribute to the exceedance at this location.

20 As discussed above, DWR has identified several environmental commitments to reduce
 21 construction-related particulate matter in the SJVAPCD (see Appendix 3B, *Environmental*
 22 *Commitments*). While these commitments will reduce localized particulate matter emissions,
 23 concentrations at the receptor locations would still exceed SJVAPCD's 24-hour PM₁₀ threshold. The
 24 receptor exposed to PM₁₀ concentrations in excess of SJVAPCD's threshold could experience
 25 increased risk for adverse human health effects. Mitigation Measure AQ-9 is available to address this
 26 effect.

27 **Table 22-17. Alternative 1A PM₁₀ and PM_{2.5} Concentration Results in SJVAPCD**

Parameter	PM ₁₀		PM _{2.5}	
	Annual (µg/m ³)	24-Hour (µg/m ³)	Annual (µg/m ³)	24-Hour (µg/m ³)
Maximum Value	0.1	<u>37.1</u>	0.07	6.1
<i>SJVAPCD Threshold</i>	<i>2.08</i>	<i>10.4</i>	<i>2.08</i>	<i>10.4</i>

Appendix 22C, *Bay Delta Conservation Plan Air Dispersion Modeling and Health Risk Assessment for Construction Emissions*, includes modeling results for all receptors.
 µg/m³ = micrograms per cubic meter

28
 29 **CEQA Conclusion:** Respirable particulates pose a human health hazard by bypassing the defenses
 30 within the mucous ciliary system and entering deep lung tissue. Construction of Alternative 1A
 31 would result in PM₁₀ concentrations at one receptor location that are above the significance
 32 thresholds established by the SJVAPCD. As such, localized particulate matter concentrations at
 33 analyzed receptors would result in significant human health impacts. Mitigation Measure AQ-9
 34 outlines a tiered strategy to reduce PM₁₀ concentrations and public exposure to a less-than-
 35 significant level.

1 **Mitigation Measure AQ-9: Implement Measures to Reduce Re-Entrained Road Dust and**
 2 **Receptor Exposure to PM_{2.5} and PM₁₀**

3 Please see Mitigation Measure AQ-9 under Impact AQ-9 in the discussion of Alternative 1A.

4 **Impact AQ-13: Exposure of Sensitive Receptors to Health Hazards from Localized Carbon**
 5 **Monoxide**

6 **NEPA Effects:** Continuous engine exhaust may elevate localized CO concentrations. Receptors
 7 exposed to these CO “hot-spots” may have a greater likelihood of developing adverse health effects
 8 (as described in Section 22.1.2). CO hot-spots are typically observed at heavily congested
 9 intersections where a substantial number of gasoline-powered vehicles idle for prolonged durations
 10 throughout the day. Construction sites are less likely to result in localized CO hot-spots due to the
 11 nature of construction activities (Sacramento Metropolitan Air Quality Management District 2014),
 12 which normally utilize diesel-powered equipment for intermittent or short durations. Moreover,
 13 construction sites must comply with the Occupational Safety and Health Administration’s (OSHA) CO
 14 exposure standards for onsite workers. Unlike regional pollutants (e.g., ROG and NO_x), CO
 15 concentrations also dissipate as a function of distance and will therefore be lower at offsite receptor
 16 locations. Accordingly, given that construction activities typically do not result in CO hot-spots,
 17 onsite concentrations must comply with OSHA standards, and CO levels dissipate as a function of
 18 distance, equipment-generated CO emissions (see Table 22-12) are not anticipated to result in
 19 adverse health hazards to sensitive receptors.

20 Construction traffic may contribute to increased roadway congestion, which could lead to conditions
 21 conducive to CO hot-spot formation. Chapter 19, *Transportation*, analyzes peak-hour traffic volumes
 22 during construction on local roadway segments. The assessment is inclusive of baseline traffic
 23 volumes plus background growth and project trips or ‘baseline plus background growth plus
 24 project’ (BPGPP). While the traffic analysis was performed for roadway segments, as opposed to
 25 intersections, the results can be used as a conservative indication of potential traffic volumes at local
 26 intersections, assuming all vehicles would travel through a single intersection.

27 As shown in Table 19-8, the highest peak hour traffic volumes under BPGPP—12,567 vehicles per
 28 hour—would occur on westbound Interstate 80 between Suisun Valley Road and State Route 12.
 29 This is about half of the congested traffic volume modeled by BAAQMD (24,000 vehicles per hour)
 30 that would be needed to contribute to a localized CO hot-spot, and less than half of the traffic volume
 31 modeled by SMAQMD (31,600 vehicles per hour). The BAAQMD’s and SMAQMD’s CO screening
 32 criteria were developed based on County average vehicle fleets that are primarily comprised of
 33 gasoline vehicles. Construction vehicles would be predominantly diesel trucks, which generate
 34 fewer CO emissions per idle-hour and vehicle mile traveled than gasoline-powered vehicles.
 35 Accordingly, the air district screening thresholds provide a conservative evaluation threshold for the
 36 assessment of potential CO emissions impacts during construction.

37 Based on the above analysis, even if all 12,567 vehicles on the modeled traffic segment drove
 38 through the same intersection in the peak hour, CO concentrations adjacent to the traveled way
 39 would not exceed the CAAQS or NAAQS according to BAAQMD’s and SMAQMD’s screening criteria.
 40 Thus, construction traffic is not anticipated to result in adverse health hazards to sensitive
 41 receptors.

42 **CEQA Conclusion:** Continuous engine exhaust may elevate localized CO concentrations. Receptors
 43 exposed to these CO “hot-spots” may have a greater likelihood of developing adverse health effects.

1 Construction sites are less likely to result in localized CO hot-spots due to the nature of construction
 2 activities (Sacramento Metropolitan Air Quality Management District 2014), which normally utilize
 3 diesel-powered equipment for intermittent or short durations. Moreover, construction sites must
 4 comply with the OSHA CO exposure standards for onsite workers. Accordingly, given that
 5 construction activities typically do not result in CO hot-spots, onsite concentrations must comply
 6 with OSHA standards, and CO levels dissipate as a function of distance, equipment-generated CO
 7 emissions are not anticipated to result in significant health hazards to sensitive receptors. Similarly,
 8 peak-hour construction traffic on local roadways would not exceed BAAQMD's or SMAQMD's
 9 conservative screening criteria for the formation potential CO hot-spots. This impact would be less
 10 than significant. No mitigation is required.

11 **Impact AQ-14: Exposure of Sensitive Receptors to Health Hazards from Diesel Particulate**
 12 **Matter in Excess of SMAQMD's Chronic Non-Cancer and Cancer Risk Thresholds**

13 **NEPA Effects:** Diesel-fueled engines, which generate DPM, would be used during construction of the
 14 proposed water conveyance facility. These coarse and fine particles may be composed of elemental
 15 carbon with adsorbed materials, such as organic compounds, sulfate, nitrate, metals, and other trace
 16 elements. The coarse and fine particles are respirable, which means that they can avoid many of the
 17 human respiratory system's defense mechanisms and enter deeply into the lungs, and as such, DPM
 18 poses inhalation-related chronic non-cancer hazard and cancer risk.²³

19 As shown in Table 22-12, construction would increase DPM emissions in SMAQMD, particularly near
 20 sites involving the greatest duration and intensity of equipment activities. Receptor exposure to
 21 construction DPM emissions was assessed by predicting the health risks in terms of excess cancer
 22 and non-cancer hazard impacts using the EPA's AERMOD dispersion modeling and guidance
 23 published by OEHHA. The methodology described in Section 22.3.1.3 provides a more detailed
 24 summary of the approach used to conduct the HRA. Appendix 22C, *Bay Delta Conservation Plan Air*
 25 *Dispersion Modeling and Health Risk Assessment for Construction Emissions*, also provides an in-depth
 26 discussion of the HRA methodology and results.

27 The results of the HRA are summarized in Table 22-18 and are compared to SMAQMD's health risk
 28 thresholds. As shown in Table 22-18, Alternative 1A would not exceed the SMAQMD's thresholds for
 29 chronic non-cancer hazard or cancer risk. Therefore, the impact from DPM emissions would be less
 30 than significant. No mitigation is required.

31 **CEQA Conclusion:** DPM generated during construction poses inhalation-related chronic non-cancer
 32 hazard and cancer risk if adjacent receptors are exposed to significant concentrations for prolonged
 33 durations. The DPM generated during Alternative 1A construction would not exceed the SMAQMD's
 34 chronic non-cancer hazard or cancer risk threshold. Therefore, this impact would be less than
 35 significant. No mitigation is required.

²³ The background cancer inhalation risk for all toxic air pollutants in the Study area ranges from 32 to 44 excess cancers per million people (2005 estimate) (U.S. Environmental Protection Agency 2014f). For context, smoking causes 636 excess lung cancer deaths per million men (390 excess deaths per million women), and countless more non-death related cancer cases (American Lung Association 2012).

Table 22-18. Alternative 1A Health Hazards from DPM Exposure in the Sacramento Metropolitan Air Quality Management District

Alternative 1A	Chronic Health Hazard	Cancer Health Risk
Maximum Value	0.003	9 per million
<i>SMAQMD Thresholds</i>	<i>1</i>	<i>10 per million</i>

Source: Appendix 22C, *Bay Delta Conservation Plan Air Dispersion Modeling and Health Risk Assessment for Construction Emissions*.

Impact AQ-15: Exposure of Sensitive Receptors to Health Hazards from Diesel Particulate Matter in Excess of YSAQMD's Chronic Non-Cancer and Cancer Risk Thresholds

NEPA Effects: As shown in Table 22-12, construction of Alternative 1A would increase DPM emissions in YSAQMD, which poses inhalation-related chronic non-cancer hazard and cancer risks if adjacent receptors are exposed to significant DPM concentrations for prolonged durations.

Receptor exposure to construction DPM emissions was assessed by predicting the health risks in terms of excess cancer and non-cancer hazard impacts using the EPA's AERMOD dispersion modeling and guidance published by OEHHA. Based on HRA results detailed in Appendix 22C, *Bay Delta Conservation Plan Air Dispersion Modeling and Health Risk Assessment for Construction Emissions*, Alternative 1A would not exceed YSAQMD's non-cancer or cancer health thresholds (see Table 22-19) and, thus, would not expose sensitive receptors to substantial pollutant concentrations. Therefore, this alternative's effect of exposure of sensitive receptors to DPM and health hazards during construction would not be adverse.

CEQA Conclusion: DPM generated during construction poses inhalation-related chronic non-cancer hazard and cancer risk if adjacent receptors are exposed to significant concentrations for prolonged durations. The DPM generated during Alternative 1A construction would not exceed the YSAQMD's chronic non-cancer or cancer thresholds. As such, construction emissions would not expose sensitive receptors to substantial health hazards. Therefore, the impact from DPM emissions would be less than significant. No mitigation is required.

Table 22-19. Alternative 1A Health Hazards from DPM Exposure in the Yolo-Solano Air Quality Management District

Alternative 1A	Chronic Health Hazard	Cancer Health Risk
Maximum Value	0.002	5 per million
<i>YSAQMD Thresholds</i>	<i>1</i>	<i>10 per million</i>

Source: Appendix 22C, *Bay Delta Conservation Plan Air Dispersion Modeling and Health Risk Assessment for Construction Emissions*

Note: Emissions would not be generated in Yolo County. However, emissions from the adjacent Sacramento County could affect sensitive receptors in Yolo County.

Impact AQ-16: Exposure of Sensitive Receptors to Health Hazards from Diesel Particulate Matter in Excess of BAAQMD's Chronic Non-Cancer and Cancer Risk Thresholds

NEPA Effects: As shown in Table 22-12, construction would increase DPM emissions in the BAAQMD, particularly near sites involving the greatest duration and intensity of construction

1 activities. DPM poses inhalation-related chronic non-cancer hazard and cancer risks if adjacent
2 receptors are exposed to significant DPM concentrations for prolonged durations.

3 Receptor exposure to construction DPM emissions was assessed by predicting the health risks in
4 terms of excess cancer and non-cancer hazard impacts using the EPA's AERMOD dispersion
5 modeling and guidance published by OEHHA. Based on the HRA results detailed in Appendix 22C,
6 *Bay Delta Conservation Plan Air Dispersion Modeling and Health Risk Assessment for Construction*
7 *Emissions*, Alternative 1A would not exceed the BAAQMD's chronic non-cancer thresholds (see Table
8 1A-20). However, BAAQMD's cancer risk threshold would be exceeded at eight receptor locations
9 due to proximity to a project haul route, control structure work area, and potential spoil area.

10 As discussed above, DWR has identified several environmental commitments to reduce
11 construction-related diesel particulate matter in the BAAQMD (see Appendix 3B, *Environmental*
12 *Commitments*). While these commitments will reduce localized DPM emissions, cancer risk levels
13 were found to exceed the significance threshold at eight analyzed receptors. Therefore, this
14 alternative's effect of exposure of sensitive receptors to DPM-related health hazards during
15 construction would be adverse.

16 Mitigation Measure AQ-16 would be available to reduce exposure to substantial cancer risk by
17 relocating affected receptors. Although Mitigation Measure AQ-16 would reduce the severity of this
18 effect, the BDCP proponents are not solely responsible for implementation of the measure. If a
19 landowner chooses not to accept DWR's offer of relocation assistance, an adverse effect in the form
20 excess cancer risk above air district thresholds would occur. Therefore, this effect would be adverse.
21 If, however, all landowners accept DWR's offer of relocation assistance, effects would not be
22 adverse.

23 **CEQA Conclusion:** DPM generated during construction poses inhalation-related chronic non-cancer
24 hazard and cancer risk if adjacent receptors are exposed to significant concentrations for prolonged
25 durations. The DPM generated during Alternative 1A construction would not exceed the BAAQMD's
26 chronic non-cancer hazard threshold; however, it would exceed the BAAQMD's cancer thresholds at
27 six receptor locations. Therefore, this impact would be significant. Mitigation Measure AQ-16 would
28 be available to reduce exposure to substantial cancer risk by relocating affected receptors. Although
29 Mitigation Measure AQ-16 would reduce the severity of this effect, the BDCP proponents are not
30 solely responsible for implementation of the measure. If a landowner chooses not to accept DWR's
31 offer of relocation assistance, a significant impact in the form excess cancer risk above air district
32 thresholds would occur. Therefore, this effect would be significant and unavoidable. If, however, all
33 landowners accept DWR's offer of relocation assistance, the impact would be less than significant.

34 **Mitigation Measure AQ-16: Relocate Sensitive Receptors to Avoid Excess Cancer Risk**

35 To avoid exposing sensitive receptors to substantial DPM concentrations, DWR will provide
36 individuals residing in areas where construction activities associated with the BDCP would
37 create DPM concentrations in excess of air district cancer risk thresholds the opportunity to
38 relocate either temporarily during the construction period or permanently, at the discretion of
39 the affected individuals. DWR will provide any individuals who accept DWR's offer of relocation
40 full compensation for expenses related to the procurement of either (i) temporary housing
41 during the period in which DPM concentrations exceed air district thresholds or permanent
42 replacement housing of the same market value as the housing being vacated by the residents or
43 greater. Under either scenario, DWR will provide, in compliance with the Uniform Relocation
44 Assistance and Real Property Acquisition Policies Act and the California Relocation Assistance

1 Act, relocation and replacement expenses, including relocation advisory services, moving cost
 2 reimbursement, and reimbursement for related expenses. Implementation of this mitigation
 3 measure will ensure that sensitive receptors will not be exposed to excess cancer risk in
 4 exceedance of air district thresholds, unless they freely choose not to accept to DWR's offer of
 5 relocation assistance.

6 **Table 22-20. Alternative 1A Health Hazards from DPM Exposure in the Bay Area Air Quality**
 7 **Management District**

Alternative 1A	Chronic Health Hazard	Cancer Health Risk
Maximum Value	0.004	<u>13 per million</u>
<i>BAAQMD Thresholds</i>	<i>1</i>	<i>10 per million</i>

Source: Appendix 22C, *Bay Delta Conservation Plan Air Dispersion Modeling and Health Risk Assessment for Construction Emissions*.

8
 9 **Impact AQ-17: Exposure of Sensitive Receptors to Health Hazards from Diesel Particulate**
 10 **Matter in Excess of SJVAPCD's Chronic Non-Cancer and Cancer Risk Thresholds**

11 **NEPA Effects:** As shown in Table 22-12, construction would increase DPM emissions in the SJVAPCD,
 12 particularly near sites involving the greatest duration and intensity of construction activities. DPM
 13 poses inhalation-related chronic non-cancer hazard and cancer risks if adjacent receptors are
 14 exposed to significant DPM concentrations for prolonged durations.

15 Receptor exposure to construction DPM emissions was assessed by predicting the health risks in
 16 terms of excess cancer and non-cancer hazard impacts using the EPA's AERMOD dispersion
 17 modeling and guidance published by OEHHA. Based on the HRA results detailed in Appendix 22C,
 18 *Bay Delta Conservation Plan Air Dispersion Modeling and Health Risk Assessment for Construction*
 19 *Emissions*, Alternative 1A would not exceed the SJVAPCD's chronic non-cancer or cancer thresholds
 20 (see Table 22-21) and, thus, would not expose sensitive receptors to substantial pollutant
 21 concentrations. Therefore, this alternative's effect of exposure of sensitive receptors to DPM
 22 emissions and their health hazards during construction would not be adverse.

23 **CEQA Conclusion:** DPM generated during construction poses inhalation-related chronic non-cancer
 24 hazard and cancer risk if adjacent receptors are exposed to significant concentrations for prolonged
 25 durations. The DPM generated during Alternative 1A construction would not exceed the SJVAPCD's
 26 chronic non-cancer or cancer thresholds, and thus would not expose sensitive receptors to
 27 substantial health hazards. Therefore, this impact for DPM emissions would be less than significant.
 28 No mitigation is required.

29 **Table 22-21. Alternative 1A Health Hazards from DPM Exposure in the San Joaquin Valley Air Pollution**
 30 **Control District**

Alternative 1A	Chronic Health Hazard	Cancer Health Risk
Maximum Value	0.0010	3 per million
<i>SJVAPCD Thresholds</i>	<i>1</i>	<i>10 per million</i>

Source: Appendix 22C, *Bay Delta Conservation Plan Air Dispersion Modeling and Health Risk Assessment for Construction Emissions*

31

1 **Impact AQ-18: Exposure of Sensitive Receptors to *Coccidioides immitis* (Valley Fever)**

2 **NEPA Effects:** Disturbance of soil containing *C. immitis* could expose the receptors adjacent to the
 3 construction site to spores known to cause Valley Fever. Areas endemic to *C. immitis* are generally
 4 arid to semiarid with low annual rainfall, and as such, soil containing the fungus is commonly found
 5 in Southern California and throughout the Central Valley. Table 22-22 summarizes Valley Fever
 6 hospitalization rates between 2002 and 2010 in affected California counties and indicates that over
 7 60% of Valley Fever cases have been in people who live in the San Joaquin Valley. Within the Plan
 8 Area, San Joaquin County has the highest hospitalization rate due to Valley Fever and is the 8th most
 9 affected county in the State. By comparison, hospitalization rates in Sacramento and Contra Costa
 10 counties are relatively low.

11 **Table 22-22. Valley Fever Hospitalizations (2002–2010)**

Region	County	Number of Cases	Percent of State Cases	Relative State Rank ^a
Northern California	Alameda	107	2%	11
	<u>Contra Costa</u>	<u>106</u>	<u>2%</u>	12
	Monterey	102	2%	13
	<u>Sacramento</u>	<u>65</u>	<u>1%</u>	16
	San Francisco	35	1%	19
	Solano	36	1%	18
Total Northern California		451	7%	-
Southern California	Imperial	20	0%	20
	Los Angeles	852	14%	2
	Orange	140	2%	10
	Riverside	310	5%	7
	San Bernardino	181	3%	9
	San Diego	313	5%	6
Total Southern California		2,267	38%	-
San Joaquin Valley	Fresno	681	11%	3
	Kern	1,810	30%	1
	Kings	345	6%	5
	Madera	55	1%	17
	Merced	81	1%	15
	<u>San Joaquin</u>	<u>238</u>	<u>4%</u>	8
	Stanislaus	93	2%	14
	Tulare	447	7%	4
Total San Joaquin Valley		3,750	62%	-
Total California		6,017	100%	-

Note: Counties in the CM1 construction work area are shown in underline.

Source: Lighthouse pers. comm.

^a State ranking presented in descending order, where counties with the highest number of cases are have the lowest rank (e.g., Kern County with 1,810 cases is ranked #1 in the State for Valley Fever hospitalizations).

12

1 The presence of *C. immitis* in the Plan Area does not guarantee that CM1 construction activities
 2 would result in increased incidence of Valley Fever. Propagation of *C. immitis* is dependent on
 3 climatic conditions, with the potential for growth and surface exposure highest following early
 4 seasonal rains and long dry spells. *C. immitis* spores can be released when filaments are disturbed by
 5 earthmoving activities, although receptors must be exposed to and inhale the spores to be at
 6 increased risk of developing Valley Fever. Moreover, exposure to *C. immitis* does not guarantee that
 7 an individual will become ill—approximately 60 percent of people exposed to the fungal spores are
 8 asymptomatic and show no signs of an infection (United States Geological Survey 2000).

9 While there are a number of factors that influence receptor exposure and development of Valley
 10 Fever, earthmoving activities during construction could release *C. immitis* spores if filaments are
 11 present and other soil chemistry and climatic conditions are conducive to spore development.
 12 Receptors adjacent to the construction area may therefore be exposed to increase risk of inhaling *C.*
 13 *immitis* spores and subsequent development of Valley Fever. Dust-control measures are the primary
 14 defense against infection (United States Geological Survey 2000). Implementation of advanced air-
 15 district recommended fugitive dust controls outlined in Appendix 3B, *Environmental Commitments*,
 16 would avoid dusty conditions and reduce the risk of contracting Valley Fever through routine
 17 watering and other controls. Therefore, this alternative's effect of exposure of sensitive receptors to
 18 increased Valley Fever risk during construction would not be adverse.

19 **CEQA Conclusion:** Construction of the water conveyance facility would involve earthmoving
 20 activities that could release *C. immitis* spores if filaments are present and other soil chemistry and
 21 climatic conditions are conducive to spore development. Receptors adjacent to the construction area
 22 may therefore be exposed to increase risk of inhaling *C. immitis* spores and subsequent development
 23 of Valley Fever. Implementation of air-district recommended fugitive dust controls outlined in
 24 Appendix 3B, *Environmental Commitments*, would avoid dusty conditions and reduce the risk of
 25 contracting Valley Fever through routine watering and other controls. Therefore, this impact would
 26 be less than significant. No mitigation is required.

27 **Impact AQ-19: Creation of Potential Odors Affecting a Substantial Number of People during** 28 **Construction or Operation of the Proposed Water Conveyance Facility**

29 **NEPA Effects:** The generation and severity of odors is dependent on a number of factors, including
 30 the nature, frequency, and intensity of the source; wind direction; and the location of the
 31 receptor(s). Odors rarely cause physical harm, but can cause discomfort, leading to complaints to
 32 regulatory agencies.

33 Sources of odor during construction include diesel exhaust from construction equipment, asphalt
 34 paving, and excavated organic matter from the removal of RTM and sediment. All air districts in the
 35 Plan Area have adopted rules that limits the amount of ROG emissions from cutback asphalt (see
 36 Section 22.2.3). Accordingly, potential odors generated during asphalt paving would be addressed
 37 through mandatory compliance with air district rules (YSAQMD Rule 2.28, SMAQMD Rule 453,
 38 BAAQMD Regulation 8, Rule 15, SJVAPCD Rule 4641). Odors from equipment exhaust would be
 39 localized and generally confined to the immediate area surrounding the construction site. These
 40 odors would be temporary and localized, and they would cease once construction activities have
 41 been completed. Thus, it is not anticipated that construction of CM1 would create objectionable
 42 odors from construction equipment or asphalt paving.

43 Construction of the water conveyance facility would require removal of subsurface material during
 44 tunnel excavation and sediment removal. Approximately 27 million cubic yards of saturated RTM

1 would result from tunnel boring activities. If present in the RTM and sediment, anaerobic decay of
 2 organic material can generate gases, specifically hydrogen sulfide. Hydrogen sulfide is commonly
 3 described as having a foul or “rotten egg” smell (Occupational Safety and Health Administration
 4 2005).

5 Geotechnical tests indicate that soils in the Plan Area have a high moisture content generally ranging
 6 about 38 to 41 percent. Testing shows that soils in the Plan Area are predominately comprised of silt
 7 and clay, with a variety of inorganic materials that are not anticipated to result in malodors. The
 8 majority of test results for organic constituents and VOC were below the method detection limits,
 9 indicating that organic decay of exposed RTM and sediment will be relatively low (URS 2014).
 10 Moreover, drying and stockpiling of the removed RTM and sediment will occur under aerobic
 11 conditions, which will further limit any potential decomposition and associated malodorous
 12 products. Accordingly, it is not anticipated that tunnel and sediment excavation would create
 13 objectionable odors.

14 Typical facilities known to produce odors include landfills, wastewater treatment plants, food
 15 processing facilities, and certain agricultural activities. Alternative 1A would not result in the
 16 addition of facilities associated with odors, and as such, long-term operation of the water
 17 conveyance facility would not result in objectionable odors.

18 **CEQA Conclusion:** Alternative 1A would not result in the addition of major odor producing facilities.
 19 Diesel emissions during construction could generate temporary odors, but these would quickly
 20 dissipate and cease once construction is completed. Likewise, potential odors generated during
 21 asphalt paving would be addressed through mandatory compliance with air district rules and
 22 regulations. While tunnel excavation would unearth approximately 27 million cubic yards of RTM,
 23 geotechnical tests indicate that soils in the Plan Area have relatively low organic constituents.
 24 Moreover, drying and stockpiling of the removed RTM will occur under aerobic conditions, which
 25 will further limit any potential decomposition and associated malodorous products. Accordingly, the
 26 impact of exposure of sensitive receptors to potential odors would be less than significant. No
 27 mitigation is required.

28 **Impact AQ-20: Generation of Criteria Pollutants in the Excess of Federal *De Minimis***
 29 **Thresholds from Construction and Operation and Maintenance of the Proposed Water**
 30 **Conveyance Facility**

31 **NEPA Effects:** EPA’s General Conformity Rule (40 CFR Parts 51 and 93) only applies to Federal
 32 actions that are taken in EPA-designated “nonattainment” or “maintenance” areas. Accordingly, as
 33 outlined in Section III.A of the General Conformity Rule, “only actions which cause emissions in
 34 designated nonattainment and maintenance areas are subject to the regulations”. Criteria pollutant
 35 emissions resulting from construction and operation of Alternative 1A in nonattainment and
 36 maintenance areas of the SFNA, SJVAB, and SFBAAB are presented in Table 22-23. Exceedances of
 37 the federal *de minimis* thresholds are shown in underlined text.

38 **Sacramento Federal Nonattainment Area**

39 As shown in Table 22-23, implementation of Alternative 1A would exceed the following SFNA
 40 federal *de minimis* thresholds:

- 41 ● ROG: 2023–2027
- 42 ● NO_x: 2018–2028

1 • PM10: 2023–2024

2 ROG and NO_x are precursors to ozone and NO_x is a precursor to PM, for which the SFNA is in
3 nonattainment for the NAAQS. Sacramento County is also a maintenance area for the PM10 NAAQS.
4 Since project emissions exceed the federal *de minimis* thresholds for ROG, NO_x, and PM10, a general
5 conformity determination must be made to demonstrate that total direct and indirect emissions of
6 ROG, NO_x, and PM10 would conform to the appropriate SFNA SIP for each year of construction in
7 which the *de minimis* thresholds are exceeded.

8 NO_x is also a precursor to PM and can contribute to PM formation. As discussed above, Sacramento
9 County is currently designated maintenance for the PM10 NAAQS and portions of the SVAB are
10 designated nonattainment for the PM2.5 NAAQS. NO_x emissions in excess of 100 tons per year in
11 Sacramento County trigger a secondary PM10 precursor threshold, whereas NO_x emissions in excess
12 of 100 tons per year in the SVAB trigger a secondary PM2.5 precursor threshold. Since NO_x
13 emissions can contribute to PM formation, NO_x emissions in excess of these secondary precursor
14 thresholds could conflict with the applicable PM10 and PM2.5 SIPs. Accordingly, NO_x offsets pursued
15 for the purposes of general conformity for those years in which NO_x emissions exceed 100 tons must
16 occur within the federally designated PM2.5 nonattainment and PM10 maintenance areas of the
17 SVAB.

18 As shown in Table 22-12, NO_x emissions generated by construction activities in SMAQMD
19 (Sacramento County) would exceed 100 tons per year between 2022 and 2027. The project
20 therefore triggers the secondary PM10 precursor threshold, requiring all NO_x offsets for 2022
21 through 2027 to occur within Sacramento County. The project also triggers the secondary PM2.5
22 precursor threshold in 2021, requiring all NO_x offsets for 2021 to occur within the federally
23 designated PM2.5 nonattainment area within the SFNA. The nonattainment boundary for PM2.5
24 includes all of Sacramento County and portions of Yolo, El Dorado, Solano, and Placer counties.

25 Given the magnitude of NO_x emissions and the limited geographic scope available for offsets in 2022
26 through 2027 (Sacramento County), neither Mitigation Measures AQ-1a nor 1b could feasibly reduce
27 NO_x emissions to net zero for the purposes of general conformity.²⁴ This impact would be adverse.
28 In the event that Alternative 1A is selected as the APA, Reclamation, USFWS, and NMFS would need
29 to demonstrate that conformity is met for NO_x and secondary PM10 formation through a local air
30 quality modeling analysis (i.e., dispersion modeling) or other acceptable methods to ensure project
31 emissions do not cause or contribute to any new violations of the NAAQS or increase the frequency
32 or severity of any existing violations.

33 **Mitigation Measure AQ-1a: Mitigate and Offset Construction-Generated Criteria Pollutant**
34 **Emissions within the SFNA to Net Zero (0) for Emissions in Excess of General Conformity**
35 ***De Minimis* Thresholds (Where Applicable) and to Quantities below Applicable CEQA**
36 **Thresholds for Other Pollutants**

37 Please see Mitigation Measure AQ-1a under Impact AQ-1 in the discussion of Alternative 1A.

²⁴ The secondary PM precursor thresholds are triggered through the General Conformity Regulation (40 CFR 93.153 (a)(1)). Accordingly, confinement of the geographic scope for available offsets only applies to the General Conformity determination and does not influence mitigation feasibility for Impacts AQ-1 or AQ-28.

1 **Mitigation Measure AQ-1b: Develop an Alternative or Complementary Offsite Mitigation**
2 **Program to Mitigate and Offset Construction-Generated Criteria Pollutant Emissions**
3 **within the SFNA to Net Zero (0) for Emissions in Excess of General Conformity *De Minimis***
4 **Thresholds (Where Applicable) and to Quantities below Applicable CEQA Thresholds for**
5 **Other Pollutants**

6 Please see Mitigation Measure AQ-1b under Impact AQ-1 in the discussion of Alternative 1A.

1 **Table 22-23. Criteria Pollutant Emissions from Construction and Operation of Alternative 1A in**
 2 **Nonattainment and Maintenance Areas of the SFNA, SJVAB, and SFBAAB (tons/year)**

Sacramento Federal Nonattainment Area						
Year	ROG	NO _x ^a	CO ^b	PM10 ^c	PM2.5	SO ₂
2016	0	0	0	0	0	0
2017	0	0	0	0	0	0
2018	3	<u>28</u>	<1	11	2	<1
2019	4	<u>27</u>	<1	25	4	<1
2020	9	<u>71</u>	1	36	6	<1
2021	11	<u>101</u>	3	51	8	<1
2022	17	<u>152</u>	7	73	12	1
2023	<u>37</u>	<u>299</u>	7	<u>111</u>	19	2
2024	<u>46</u>	<u>361</u>	7	<u>135</u>	24	2
2025	<u>35</u>	<u>257</u>	4	90	17	1
2026	<u>32</u>	<u>223</u>	4	80	16	1
2027	<u>28</u>	<u>215</u>	4	91	17	1
2028	8	<u>62</u>	5	36	7	<1
2029	<1	3	<1	3	<1	<1
ELT	0.21	1.24	2.60	0.42	0.12	0.01
LLT	0.18	1.05	2.48	0.41	0.11	0.01
<i>De Minimis</i>	25	25	100	100	100	100
San Joaquin Valley Air Basin						
Year	ROG	NO _x ^a	CO ^b	PM10	PM2.5	SO ₂
2016	0	0	0	2	<1	0
2017	0	0	0	0	0	0
2018	2	7	<1	12	2	<1
2019	<u>11</u>	<u>81</u>	<1	19	3	<1
2020	<u>20</u>	<u>139</u>	<1	36	6	<1
2021	<u>30</u>	<u>217</u>	<1	58	9	1
2022	<u>28</u>	<u>185</u>	<1	35	6	1
2023	<u>25</u>	<u>151</u>	<1	19	4	1
2024	<u>24</u>	<u>139</u>	<1	18	4	<1
2025	<u>15</u>	<u>92</u>	<1	14	3	<1
2026	6	<u>37</u>	<1	3	1	<1
2027	<1	<1	<1	1	1	<1
2028	0	0	0	0	0	0
2029	0	0	0	0	0	0
ELT	0.01	0.07	0.13	0.02	<0.01	<0.01
LLT	0.01	0.06	0.12	0.01	<0.01	<0.01
<i>De Minimis</i>	10	10	100	100	100	100

San Francisco Bay Area Air Basin						
Year	ROG	NO _x ^a	CO ^b	PM10 ^d	PM2.5	SO ₂
2016	0	0	0	-	0	0
2017	0	0	0	-	0	0
2018	<1	2	<1	-	<1	<1
2019	2	18	1	-	1	<1
2020	4	29	1	-	1	<1
2021	5	38	2	-	2	<1
2022	5	44	4	-	3	<1
2023	9	67	6	-	6	1
2024	12	92	6	-	7	1
2025	8	57	4	-	5	1
2026	6	44	4	-	4	<1
2027	3	24	3	-	3	<1
2028	<1	3	1	-	1	<1
2029	<1	<1	<1	-	<1	<1
ELT	0.01	0.08	0.14	-	0.01	<0.01
LLT	0.01	0.07	0.14	-	0.01	<0.01
<i>De Minimis</i>	<i>100</i>	<i>100</i>	<i>100</i>	-	<i>100</i>	<i>100</i>

Notes

- ^a NO_x emissions in excess of 100 tons per year within federally designated PM10 and PM2.5 nonattainment or maintenance areas trigger a secondary PM10 and PM2.5 precursor threshold. NO_x emissions in excess of this secondary threshold could conflict with the applicable PM10 and PM2.5 SIPs. Accordingly, NO_x offsets pursued for the purposes of general conformity for those years in which NO_x emissions exceed 100 tons must occur within the federally designated PM2.5 nonattainment and PM10 maintenance areas, as applicable.
- ^b The proposed water conveyance facility is located within a federally designated CO attainment area. Accordingly, CO emissions generated by construction of CM1 are not subject to the General Conformity Rule and are excluded from the emissions summary and general conformity analysis (40 CFR Part 51 and 93, Section III.A). Emissions presented in the table are limited those generated by haul trucks, which would occur in federally designated CO maintenance area.
- ^c There are no federally designated PM10 maintenance areas in Yolo County. Accordingly, PM10 emissions generated by construction of CM1 in Yolo County are not subject to the General Conformity Rule and are excluded from the emissions summary and general conformity analysis for the SFNA (40 CFR Part 51 and 93, Section III.A). Emissions presented in the table are limited those generated within Sacramento County.
- ^d There are no federally designated PM10 nonattainment or maintenance areas in the SFBAAB. Accordingly, PM10 emissions generated by construction of CM1 are not subject to the General Conformity Rule and are excluded from the emissions summary and general conformity analysis (40 CFR Part 51 and 93, Section III.A).

1

2

San Joaquin Valley Air Basin

3

As shown in Table 22-23, implementation of Alternative 1A would exceed the following SJVAB federal *de minimis* thresholds:

4

5

- ROG: 2019–2025

6

- NO_x: 2019–2026

1 ROG and NO_x are precursors to ozone and NO_x is a precursor to PM, for which the SJVAB is in
 2 nonattainment for the NAAQS. Since project emissions exceed the federal *de minimis* threshold for
 3 ROG and NO_x, a general conformity determination must be made to demonstrate that total direct
 4 and indirect emissions of ROG and NO_x would conform to the appropriate SJVAB SIP for each year of
 5 construction in which the *de minimis* thresholds are exceeded.

6 NO_x is also a precursor to PM and can contribute to PM formation. As discussed above, the SJVAB is
 7 currently designated maintenance for the PM₁₀ NAAQS and nonattainment for the PM_{2.5} NAAQS.
 8 NO_x emissions in excess of 100 tons per year trigger a secondary PM precursor threshold, and could
 9 conflict with the applicable PM₁₀ and PM_{2.5} SIPs. As shown in Table 22-23, NO_x emissions
 10 generated by construction activities in the SJVAB would exceed 100 tons per year between 2020 and
 11 2024. NO_x offsets pursued for the purposes of general conformity for those years in which NO_x
 12 emissions exceed 100 tons must occur within the federally designated PM_{2.5} nonattainment and
 13 PM₁₀ maintenance areas of the SJVAB, which are consistent with the larger nonattainment
 14 boundary for ozone.

15 As shown in Appendix 22E, *General Conformity Determination*, Attachment 22E-1, SJVAPCD confirms
 16 that sufficient emissions reduction credits would be available to fully offset ROG and NO_x emissions
 17 in excess of the federal *de minimis* thresholds zero through implementation of Mitigation Measures
 18 AQ-4a and 4b. Mitigation Measures AQ-4a and 4b will ensure the requirements of the mitigation and
 19 offset program are implemented and conformity requirements for ROG and NO_x are met, should
 20 Alternative 1A be selected as the APA.

21 **Mitigation Measure AQ-4a: Mitigate and Offset Construction-Generated Criteria Pollutant**
 22 **Emissions within SJVAPCD/SJVAB to Net Zero (0) for Emissions in Excess of General**
 23 **Conformity *De Minimis* Thresholds (Where Applicable) and to Quantities below**
 24 **Applicable SJVAPCD CEQA Thresholds for Other Pollutants**

25 Please see Mitigation Measure AQ-4a under Impact AQ-4 in the discussion of Alternative 1A.

26 **Mitigation Measure AQ-4b: Develop an Alternative or Complementary Offsite Mitigation**
 27 **Program to Mitigate and Offset Construction-Generated Criteria Pollutant Emissions**
 28 **within the SJVAPCD/SJVAB to Net Zero (0) for Emissions in Excess of General Conformity**
 29 ***De Minimis* Thresholds (Where Applicable) and to Quantities below Applicable SJVAPCD**
 30 **CEQA Thresholds for Other Pollutants**

31 Please see Mitigation Measure AQ-4b under Impact AQ-4 in the discussion of Alternative 1A.

32 ***San Francisco Bay Area Air Basin***

33 As shown in Table 22-23, implementation of the Alternative 1A would not exceed any of the SFBAAB
 34 federal *de minimis* thresholds. Accordingly, a general conformity determination is not required as
 35 total direct and indirect emissions would conform to the appropriate SFBAAB SIPs.

36 ***CEQA Conclusion:*** SFNA and SJVAB are classified as nonattainment or maintenance areas with
 37 regard to the ozone and PM₁₀ NAAQS, and the impact of increases in criteria pollutant emissions
 38 above the air basin *de minimis* thresholds could conflict with or obstruct implementation of the
 39 applicable air quality plans. Since construction emissions in the SFNA and SJVAB would exceed the
 40 *de minimis* thresholds for ROG, NO_x, and PM₁₀ (SFNA only), this impact would be significant.

1 Mitigation Measures AQ-4a and AQ-4b would ensure project emissions would not result in an
2 increase in regional ROG or NO_x in the SJVAB. These measures would therefore ensure total direct
3 and indirect ROG and NO_x emissions generated by the project would conform to the appropriate
4 SJVAB SIPs by offsetting the action's emissions in the same or nearby area to net zero. Accordingly,
5 impacts would be less than significant with mitigation in the SJVAB.

6 Although Mitigation Measures AQ-1a and AQ-1b would reduce NO_x in the SFNA, given the magnitude
7 of NO_x emissions and the limited geographic scope available for offsets (Sacramento County),
8 neither measure could feasibly reduce NO_x emissions to net zero for the purposes of general
9 conformity. This impact would be significant and unavoidable in the SFNA.

10 Emissions generated within the SFBAAB would not exceed the SFBAAB de minimis thresholds and
11 would therefore conform to the appropriate SFBAAB SIPs. No mitigation is required.

12 **Impact AQ-21: Generation of Cumulative Greenhouse Gas Emissions during Construction of** 13 **the Proposed Water Conveyance Facility**

14 **NEPA Effects:** GHG (CO₂, CH₄, N₂O, SF₆, and HFCs) emissions resulting from construction of
15 Alternative 1A are summarized in Table 22-24. Emissions are presented with implementation of
16 environmental commitments (see Appendix 3B, *Environmental Commitments*) and state mandates to
17 reduce GHG emissions. State mandates include the RPS, LCFS, and Pavley. These mandates do not
18 require additional action on the part of DWR, but will contribute to GHG emissions reductions. For
19 example, Pavley and LCFS will improve the fuel efficiency of vehicles and reduce the carbon content
20 of transportation fuels, respectively. Equipment used to construct the project will therefore be
21 cleaner and less GHG intensive than if the state mandates had not been established.

22 Table 22-25 summarizes GHG emissions that would be generated in the BAAQMD, SMAQMD,
23 SJVAPCD, and YSAQMD. The table does not include emissions from electricity generation as these
24 emissions would be generated by power plants located throughout the state and the specific
25 location of electricity-generating facilities is unknown (see discussion preceding this impact
26 analysis). Due to the global nature of GHGs, the determination of effects is based on total emissions
27 generated by construction (Table 22-24). GHG emissions presented in Table 22-25 are therefore
28 provided for information purposes only.

1 **Table 22-24. GHG Emissions from Construction of Alternative 1A (metric tons/year)^a**

Year	Equipment and Vehicles (CO ₂ e)	Electricity (CO ₂ e)	Concrete Batching (CO ₂)	Total CO ₂ e
2016	0	0	577	577
2017	0	0	0	0
2018	12,534	649	71,664	84,847
2019	46,452	3,625	11,256	61,334
2020	80,608	17,414	69,945	167,967
2021	120,912	46,364	138,729	306,005
2022	144,480	65,106	210,265	419,851
2023	187,617	57,956	205,289	450,863
2024	209,256	60,453	245,610	515,320
2025	142,041	40,781	164,006	346,828
2026	109,805	14,559	39,302	163,667
2027	84,144	2,781	56,679	143,605
2028	30,837	73	11,151	42,062
2029	1,300	2	0	1,302
<i>Total</i>	<i>1,169,987</i>	<i>309,765</i>	<i>1,224,476</i>	<i>2,704,227</i>

^a Emissions estimates do not account for GHG flux from land disturbance. Surface and subsurface (e.g., tunneling) activities may oxidize peat soils, releasing GHG emissions. However, recent geotechnical surveys indicated that peat is negligible below 80 feet of depth. The tunnel will be placed below this range and the design adjusted if peat soils are discovered. Peat material encountered during surface excavation for non-tunnel work will be covered with top soil to reduce oxidation when needed.

Values may not total correctly due to rounding.

2

3 **Table 22-25. GHG Emissions from Construction of Alternative 1A by Air District (metric tons/year)**

4

Year	Equipment and Vehicles (CO ₂ e)	Concrete Batching (CO ₂) ^a	Total CO ₂ e ^b
SMAQMD	533,894	734,685	1,268,580
YSAQMD	61,772	0	61,772
SJVAPCD	357,359	244,895	602,254
BAAQMD	216,962	244,895	461,857

^a Emissions assigned to each air district based on the number of batching plants located in that air district.

^b Values may not total correctly due to rounding.

5

6 Construction of Alternative 1A would generate 2.7 million metric tons of GHG emissions after
7 implementation of environmental commitments and state mandates (see Appendix 3B,
8 *Environmental Commitments*). This is equivalent to adding 569,000 typical passenger vehicles to the
9 road during construction (U.S. Environmental Protection Agency 2014e). As discussed in section
10 22.3.2, *Determination of Effects*, any increase in emissions above net zero associated with
11 construction of the BDCP water conveyance features would be adverse. Accordingly, this effect
12 would be adverse. Mitigation Measure AQ-21, which would develop a GHG Mitigation Program to

1 reduce construction-related GHG emissions to net zero, is available address this effect. Please refer
 2 to Appendix 22A, *Air Quality Analysis Methodology*, for a summary of assumptions used to estimate
 3 potential GHG reductions associated with each strategy.

4 **CEQA Conclusion:** Construction of Alternative 1A would generate 2.7 million metric tons of GHG
 5 emissions. This is equivalent to adding 569,000 typical passenger vehicles to the road during
 6 construction (U.S. Environmental Protection Agency 2014e). As discussed in section 22.3.2,
 7 *Determination of Effects*, any increase in emissions above net zero associated with construction of
 8 the BDCP water conveyance features would be significant. Mitigation Measure AQ-21 would develop
 9 a GHG Mitigation Program to reduce construction-related GHG emissions to net zero. Accordingly,
 10 this impact would be less-than-significant with implementation of Mitigation Measure AQ-21.

11 **Mitigation Measure AQ-21: Develop and Implement a GHG Mitigation Program to Reduce**
 12 **Construction Related GHG Emissions to Net Zero (0)**

13 BDCP proponents will develop a GHG Mitigation Program prior to the commencement of any
 14 construction or other physical activities associated with CM1 that would generate GHG
 15 emissions. The GHG Mitigation Program will consist of feasible options that, taken together, will
 16 reduce construction-related GHG emissions to net zero (0) (i.e., emissions will be reduced to the
 17 maximum extent feasible and any remaining emissions from the project will be offset elsewhere
 18 by emissions reductions of equal amount). The BDCP proponents will determine the nature and
 19 form of the components of the GHG Mitigation Program after consultation with the following
 20 agencies, as applicable: (i) Study area air districts (BAAQMD, SMAQMD, SJVPACD, and YSAQMD),
 21 (ii) California Air Resources Board, (iii) U.S. Environmental Protection Agency, and (iv)
 22 California Energy Commission.

23 Specific strategies that could be used in formulating the GHG Mitigation Program are
 24 summarized below. The identified strategies will produce GHG reductions across a broad range
 25 of emissions sectors throughout the state. The strategies are divided into seven categories based
 26 on their application. Potential GHG emissions reductions that could be achieved by each
 27 measure are identified. It is theoretically possible that many of the strategies discussed below
 28 could independently achieve a net-zero GHG footprint for BDCP construction activities. Various
 29 combinations of measure strategies could also be pursued to optimize total costs or community
 30 co-benefits. The BDCP proponents shall be responsible for determining the overall mix of
 31 strategies necessary to ensure the performance standard to mitigate the adverse GHG
 32 construction impacts is met.

33 BDCP proponents will develop a mechanism for quantifying, funding, implementing, and
 34 verifying emissions reductions associated with the selected strategies. BDCP proponents will
 35 also conduct annual reporting to verify and document that selected strategies achieve sufficient
 36 emissions reductions to offset construction-related emissions to net zero. All selected strategies
 37 must be quantifiable, verifiable, enforceable, and satisfy the basic criterion of additionally (i.e.,
 38 the reductions would not happen without the financial support of purchased offset credits or
 39 other mitigation strategies). Annual reports will include, at a minimum the following
 40 components.

- 41 ● Calculated or measured emissions from construction activities over the reporting year.
- 42 ● Projects selected for funding during the reporting year.
- 43 ● Total funds distributed to selected projects during the reporting year.

- 1 • Cumulative funds distributed since program inception.
- 2 • Emissions reductions achieved during the reporting year.
- 3 • Cumulative reductions since program inception.
- 4 • Total emissions reductions remaining to satisfy the requirements of Mitigation Measure
- 5 AQ-15.

6 **GHG Emissions Reduction Strategies to Consider in Formulating a GHG Mitigation Program**

7 This section summarizes GHG reduction strategies that will be considered in formulating a GHG
 8 mitigation program. Quantitative information on the potential capacity of each strategy is
 9 provided in Appendix 22A, *Air Quality Analysis Methods*. These estimates are based on general
 10 construction activity information, the size and trading volume of existing carbon offset markets,
 11 and available alternative energy resources (e.g., biomass, renewable energy) available to the
 12 project as potential mitigation strategies. Emissions reductions quantified for each strategy
 13 should be seen as high-level screening values that illustrate a rough order of magnitude for the
 14 expected level of emissions reductions or offsets. Moreover, the mitigation strategies should be
 15 viewed not as individual strategies, but rather as a suite of strategies. If one strategy, when
 16 investigated in greater detail prior to implementation, cannot deliver as high a level of emissions
 17 reduction or offset as initially estimated, other strategies will be implemented to ensure
 18 achievement of the performance standard of zero net GHG emissions from the project.

19 ***Renewable Energy Purchase Agreement***

- 20 • **Strategy-1: Renewable Energy Purchase Agreement:** Enter into a power purchase
 21 agreement, where feasible, with utilities which provide electricity service within the Study
 22 area to purchase construction electricity from renewable sources. Renewable sources must
 23 be zero emissions energy sources (e.g., wind, solar, hydro) and may not be accounted to
 24 utility RPS goals.

25 ***Additional Onsite Mitigation***

- 26 • **Strategy-2: Engine Electrification:** DWR has identified all feasible electrification
 27 requirements as environmental commitments. It is anticipated that additional technology
 28 will be available by the time construction starts that will enable further electrification. This
 29 strategy would take advantage of new technologies as they become available and will
 30 engage the maximum level of engine electrification feasible for onsite heavy-duty
 31 equipment.
- 32 • **Strategy-3: Low Carbon Concrete:** Require concrete components to be constructed out of
 33 concrete with up to 70% replacement of cement with supplementary cementitious materials
 34 (SCM) with lower embodied energy and associated GHG emissions.²⁵ Implementation of this
 35 strategy would require structural testing to ensure the concrete meet required strategy
 36 strength, durability, workability, and rigidity standards. If new materials with lower

²⁵ SCM are often incorporated in concrete mix to reduce cement contents, improve workability, increase strength, and enhance durability. Although SCM can improve the strength of resulting structures, proper testing is required ensure the cement meets technical specifications for strength and rigidity.

1 embodied energy or superior workability are developed between the writing of this
 2 measure and project commencement, the BDCP proponents will investigate use of those
 3 materials in place of SCM.

- 4 ● **Strategy-4: Renewable Diesel and/or Bio-diesel:** Require use of renewable diesel
 5 sometimes also called “green diesel” and or bio-diesel fuels for operation of all diesel
 6 equipment. If new technologies or fuels with lower emissions rates are developed between
 7 the writing of this measure and project commencement, those advanced technologies or
 8 fuels could be incorporated into this measure.

9 ***Energy Efficiency Retrofits and Rooftop Renewable Energy***

- 10 ● **Strategy-5: Residential Energy Efficiency Improvements:** Develop a residential energy
 11 retrofit package in conjunction with local utility providers to achieve reductions in natural
 12 gas and electricity usage. The retrofit package should include, at a minimum, the following
 13 improvements.
 - 14 ○ Replacement of interior high use incandescent lamps with compact florescent lamps
 15 (CFLs) or Light Emitting Diodes (LED).
 - 16 ○ Installation of programmable thermostats.
 - 17 ○ Replacement of windows with double-pane or triple-pane solar-control low-E argon gas
 18 filled wood frame windows.
 - 19 ○ Identification and sealing of dust and air leaks.
 - 20 ○ Replacement of electric clothes dryers with natural gas dryers.
 - 21 ○ Replacement of natural gas furnaces with Energy Star labeled models.
 - 22 ○ Installation of insulation.

23 This measure is inherently scalable (i.e., the total number of houses retrofit is likely limited
 24 by funds rather than the availability of housing stock).

- 25 ● **Strategy-6: Commercial Energy Efficiency Improvements:** Develop a commercial energy
 26 retrocommissioning package in conjunction with local utility providers to improve building-
 27 wide energy efficiency by at least 15%, relative to current energy consumption levels. This
 28 measure is inherently scalable.
- 29 ● **Strategy-7: Residential Rooftop Solar:** Develop a residential rooftop solar installation
 30 program in conjunction with local utility providers. The installation program will allow
 31 homeowners to install solar photovoltaic systems at zero or minimal up-front cost. All
 32 projects installed under this measure must be designed for high performance (e.g., optimal
 33 full-sun location, solar orientation) and additive to utility RPS goals. This measure is
 34 inherently scalable.
- 35 ● **Strategy-8: Commercial Rooftop Solar:** Develop a commercial rooftop solar installation
 36 program in conjunction with local utility providers. The installation program will allow
 37 business owners to install solar photovoltaic systems at zero or minimal up-front cost. All
 38 projects installed under this measure must be designed for high performance (e.g., optimal
 39 full-sun location, solar orientation) and additive to utility RPS goals. This measure is
 40 inherently scalable.

Carbon Offsets

- **Strategy-9: Purchase Carbon Offsets:** In partnership with offset providers, purchase carbon offsets. Offset protocols and validation could tier off existing standards (e.g., Climate Registry Programs) or could be developed independently, provided such protocols satisfy basic criterion of additionally (i.e., the reductions would not happen without the financial support of purchased offset credits). ARB has established a Cap and Trade registry that identifies qualified providers and AB 32 projects. It is estimated that between 2012 and 2020, 2.5 billion allowances will be made available within the state (Legislative Analyst's Office 2012). The national and international carbon markets are likely greater. Potential offset programs could include the following.

- AB 32 U.S. Forest and Urban Forest Project Resources
- AB 32 Livestock Projects
- AB 32 Ozone Depleting Substances Projects
- AB 32 Urban Forest Projects
- Other-California Based Offsets
- United States Based Offsets
- International Offsets (e.g., clean development mechanisms)

This measure is inherently scalable based on the volume of offsets purchased.

Biomass Digestion and Conversion

- **Strategy-10: Development of Biomass Waste Digestion and Conversion Facilities:** Provide financing for facility development either through long term power purchase agreements or up front project financing. Projects will be awarded based on competitive bidding process and chosen for GHG sequestration and other environmental benefits to project area. Projects will provide a range of final products: electricity generation, Compressed Natural Gas for transportation fuels, and pipeline quality biomethane.
- **Strategy-11: Agriculture Waste Conversion Development:** Fund the re-commissioning of thermal chemical conversion facilities to process collected agricultural biomass residues. Project funding will include better resource modeling and provide incentives to farmers in the project area to deliver agricultural wastes to existing facilities.

Increase Renewable Energy Purchases to Operate the State Water Project

- **Strategy-12: Temporarily Increase Renewable Energy Purchases for Operations:** Temporarily increase renewable energy purchases under the Renewable Energy Procurement Plan to offset BDCP construction emissions. DWR as part of its CAP is implementing a Renewable Energy Procurement Plan. This plan identifies the quantity of additional renewable electricity resources that DWR will purchase in each year between 2010 and 2050 to achieve the GHG emissions reduction goals laid out in the CAP.

Land Use Change and Sequestration

- **Strategy-13: Tidal Wetland Inundation:** Expand the number of subsidence reversal and/or carbon sequestration projects currently being undertaken by DWR on Sherman and Twitchell Islands. Existing research at the Twitchell Wetlands Research Facility

1 demonstrates that wetland restoration can sequester 25 tons of carbon per acre per year.
 2 Measure funding could be used to finance permanent wetlands for waterfowl or rice
 3 cultivation, creating co-benefits for wildlife and local farmers.

4 **Impact AQ-22: Generation of Cumulative Greenhouse Gas Emissions from Operation and**
 5 **Maintenance of the Proposed Water Conveyance Facility and Increased Pumping**

6 **NEPA Effects:** Operation of Alternative 1A would generate direct and indirect GHG emissions.
 7 Sources of direct emissions include heavy-duty equipment, on road crew trucks, and employee
 8 vehicle traffic. Indirect emissions would be generated predominantly by electricity consumption
 9 required for pumping as well as, maintenance, lighting, and other activities.

10 Table 22-26 summarizes long-term operational GHG emissions associated with operations,
 11 maintenance, and increased SWP pumping. Emissions were quantified for both ELT and LLT
 12 conditions, although activities would take place annually until project decommissioning. Emissions
 13 include state mandates to reduce GHG emissions (described in Impact AQ-21) (there are no BDCP
 14 specific operational environmental commitments). Total CO₂e emissions are compared to both the
 15 No Action Alternative (NEPA point of comparison) and Existing Conditions (CEQA baseline). As
 16 discussed in Section 22.3.1.2, equipment emissions are assumed to be zero under both the No Action
 17 Alternative (NEPA point of comparison) and Existing Conditions (CEQA baseline). The equipment
 18 emissions presented in Table 22-26 are therefore representative of project impacts for both the
 19 NEPA and CEQA analysis.

20 **Table 22-26. GHG Emissions from Operation, Maintenance, and Increased SWP Pumping, Alternative**
 21 **1A (metric tons/year)**

Condition	Equipment CO ₂ e	SWP Electricity CO ₂ e		Total CO ₂ e	
		NEPA Point of Comparison	CEQA Baseline	NEPA Point of Comparison	CEQA Baseline
ELT	555	-	249,823	-	250,378
LTT	541	75,697	32,546	76,238	33,087

Note: The *NEPA point of comparison* compares total CO₂e emissions after implementation of Alternative 1A to the No Action Alternative, whereas the *CEQA baseline* compares total CO₂e emissions to Existing Conditions.

22
 23 Table 22-27 summarizes equipment CO₂e emissions that would be generated in the BAAQMD,
 24 SMAQMD, and SJVAPCD (no emissions would be generated in the YSAQMD). The table does not
 25 include emissions from SWP pumping as these emissions would be generated by power plants
 26 located throughout the state (see discussion preceding this impact analysis). GHG emissions
 27 presented in Table 22-27 are therefore provided for information purposes only.

1 **Table 22-27. Equipment CO₂e Emissions from Operation and Maintenance of Alternative 1A by Air**
 2 **District (metric tons/year)^a**

Air District	ELT Conditions	LLT Conditions
SMAQMD	500	485
SJVAPCD	25	26
BAAQMD	30	31
Total	555	541

^a Emissions do not include emissions generated by increased SWP pumping.

3 4 **SWP Operational and Maintenance GHG Emissions Analysis**

5 Alternative 1A would add approximately 1,727 GWh²⁶ of additional net electricity demand to
 6 operation of the SWP each year assuming 2060 (LLT) conditions. Conditions at 2060 are used for
 7 this analysis because they yield the largest potential additional net electricity requirements and
 8 therefore represent the largest potential impact. This 1,727 GWh is based on assumptions of future
 9 conditions and operations and includes all additional energy required to operate the project with
 10 BDCP Alternative 1A including any additional energy associated with additional water being moved
 11 through the system.

12 In the CAP, DWR developed estimates of historical, current, and future GHG emissions. Figure 22-3
 13 shows those emissions as they were projected in the CAP and how those emissions projections
 14 would change with the additional electricity demands needed to operate the SWP with the addition
 15 of BDCP Alternative 1A. As shown in Figure 22-3, in 2024, the year BDCP Alternative 1A is projected
 16 to go online, DWR total emissions jump from around 912,000 metric tons of CO₂e to nearly 1.7
 17 million metric tons of CO₂e. This elevated level is approximately 400,000 metric tons of CO₂e above
 18 DWR's designated GHG emissions reduction trajectory (red line, which is the linear interpolation
 19 between DWR's 2020 GHG emissions goal and DWR's 2050 GHG emissions goal.) The projection
 20 indicates that after the initial jump in emissions, existing GHG emissions reduction measures would
 21 bring the elevated GHG emissions level back down below DWR's GHG emissions reduction trajectory
 22 by 2045 and that DWR would still achieve its GHG emission reduction goal by 2050.

23 Because employing only DWR's existing GHG emissions reduction measures would result in a large
 24 initial increase in emissions and result in DWR emissions exceeding the emissions reduction
 25 trajectory for several years, DWR will take additional actions to reduce GHG emissions if BDCP
 26 Alternative 1A is implemented.

27 The CAP sets forth DWR's plan to manage its activities and operations to achieve its GHG emissions
 28 reduction goals. The CAP commits DWR to monitoring its emissions each year and evaluating its
 29 emissions every five years to determine whether it is on a trajectory to achieve its GHG emissions
 30 reduction goals. If it appears that DWR will not meet the GHG emission reduction goals established
 31 in the plan, DWR may make adjustments to existing emissions reduction measures, devise new
 32 measures to ensure achievement of the goals, or take other action. Given the scale of additional

²⁶ Estimated net energy demand differs slightly from what is presented in Chapter 21, *Energy*. This is because the above analysis includes energy needed for transmission and distribution of water along the Valley String, which is required to enable a comparison with the assumptions in DWR's CAP.

emissions that BDCP Alternative 1A would add to DWR's total GHG emissions, DWR has evaluated the most likely method that it would use to compensate for such an increase in GHG emissions: modification of DWR's Renewable Energy Procurement Plan (REPP). The DWR REPP (GHG emissions reduction measure OP-1 in the CAP) describes the amount of additional renewable energy that DWR expects to purchase each year to meet its GHG emissions reduction goals. The REPP lays out a long-term strategy for renewable energy purchases, though actual purchases of renewable energy may not exactly follow the schedule in the REPP and will ultimately be governed by actual operations, measured emissions, and contracting.

Table 22-28 below shows how the REPP could be modified to accommodate BDCP Alternative 1A, and shows that additional renewable energy resources could be purchased during years 2022–2025 over what was programmed in the original REPP. The net result of this change is that by 2026 DWR's energy portfolio would contain nearly 1,700 GWh of renewable energy (in addition to hydropower generated at SWP facilities). This amount is nearly twice the amount called for in the original DWR REPP (1,692 compared to 792). In later years, 2031–2050, DWR would bring on slightly fewer additional renewable resources than programmed in the original REPP; however, over 13,000 additional GWh of electricity would be purchased under the modified REPP during the 40 year period 2011–2050 then under the original REPP. Figure 22-4 shows how this modified Renewable Energy Procurement Plan would affect DWR's projected future emissions with BDCP Alternative 1A.

Table 22-28. Changes in Expected Renewable Energy Purchases 2011–2050 (Alternative 1A)

Year(s)	Additional GWh of Renewable Power Purchased (Above previous year)	
	Original CAP	New CAP
2011–2020	36	36
2021	72	72
2022–2025	72	297
2026–2030	72	72
2031–2040	108	58
2041–2050	144	69
Total Cumulative	52,236	65,461

As shown in the analysis above and consistent with the analysis contained in the CAP and associated Initial Study and Negative Declaration for the CAP, BDCP Alternative 1A would not adversely affect DWR's ability to achieve the GHG emissions reduction goals set forth in the CAP. Further, Alternative 1A would not conflict with any of DWR's specific action GHG emissions reduction measures and implements all applicable project level GHG emissions reduction measures as set forth in the CAP. BDCP Alternative 1A is therefore consistent with the analysis performed in the CAP. There would be no adverse effect.

CEQA Conclusion: SWP GHG emissions currently are below 1990 levels and achievement of the goals of the CAP means that total DWR GHG emissions will be reduced to 50% of 1990 levels by 2020 and to 80% of 1990 levels by 2050. The implementation of BDCP Alternative 1A would not affect DWR's established emissions reduction goals or baseline (1990) emissions and therefore would not result in a change in total DWR emissions that would be considered significant. Prior adoption of the CAP by DWR already provides a commitment on the part of DWR to make all

1 necessary modifications to DWR's REPP (as described above) or any other GHG emission reduction
 2 measure in the CAP that are necessary to achieve DWR's GHG emissions reduction goals. Therefore
 3 no amendment to the approved CAP is necessary to ensure the occurrence of the additional GHG
 4 emissions reduction activities needed to account for BDCP-related operational emissions. The effect
 5 of BDCP Alternative 1A with respect to GHG emissions is less than cumulatively considerable and
 6 therefore less than significant. No mitigation is required.

7 **Impact AQ-23: Generation of Cumulative Greenhouse Gas Emissions from Increased CVP**
 8 **Pumping as a Result of Implementation of CM1**

9 *NEPA Effects:* As previously discussed, DWR's CAP cannot be used to evaluate environmental
 10 impacts associated with increased CVP pumping, as emissions associated with CVP are not under
 11 DWR's control and are not included in the CAP. Accordingly, GHG emissions resulting from increased
 12 CVP energy use are evaluated separately from GHG emissions generated as a result of SWP energy
 13 use.

14 Under Alternative 1A, operation of the CVP yields the generation of clean, GHG emissions-free,
 15 hydroelectric energy. This electricity is sold into the California electricity market or directly to
 16 energy users. Analysis of the No Action Alternative indicates that the CVP generates and will
 17 continue to generate all of the electricity needed to operate the CVP system and approximately
 18 3,500 GWh of excess hydroelectric energy that would be sold to energy users throughout California.
 19 Implementation of Alternative 1A, however, would result in an increase of 167 GWh in the demand
 20 for CVP generated electricity, which would result in a reduction of 167 GWh of electricity available
 21 for sale from the CVP to electricity users. This reduction in the supply of GHG emissions-free
 22 electricity to the California electricity users could result in a potential indirect effect of the project,
 23 as these electricity users would have to acquire substitute electricity supplies that may result in GHG
 24 emissions (although additional conservation is also a possible outcome as well).

25 It is unknown what type of power source (e.g., renewable, natural gas) would be substituted for CVP
 26 electricity or if some of the lost power would be made up with higher efficiency. Given State
 27 mandates for renewable energy and incentives for energy efficiency, it is possible that a
 28 considerable amount of this power would be replaced by renewable resources or would cease to be
 29 needed as a result of higher efficiency. However, to ensure a conservative analysis, indirect
 30 emissions were quantified for the entire quantity of electricity (167 GWh) using the current and
 31 future statewide energy mix (adjusted to reflect RPS) (please refer to Appendix 22A, *Air Quality*
 32 *Analysis Methodology*, for additional detail on quantification methods).

33 Substitution of 167 GWh of electricity with a mix of sources similar to the current statewide mix
 34 would result in emissions of 46,714 metric tons of CO₂e; however, under expected future conditions
 35 (after full implementation of the RPS), emissions would be 36,300 metric tons of CO₂e.

36 Use of CVP hydroelectricity to meet increased electricity demand from operation of CVP facilities
 37 associated with Alternative 1A would reduce available CVP hydroelectricity to other California
 38 electricity users. Substitution of the lost electricity with electricity from other sources could
 39 indirectly result in an increase of GHG emissions that is comparable or larger than the level of GHG
 40 emissions that trigger mandatory GHG reporting for major facilities. As a result, these emissions
 41 could contribute to a cumulatively considerable effect and are therefore adverse. However, these
 42 emissions would be caused by dozens of independent electricity users, who had previously bought
 43 CVP power, making decisions about different ways to substitute for the lost power. These decisions
 44 are beyond the control of Reclamation or any of the other BDCP Lead Agencies. Further, monitoring

1 to determine the actual indirect change in emissions as a result of BDCP actions would not be
 2 feasible. In light of the impossibility of predicting where any additional emissions would occur, as
 3 well as Reclamation's lack of regulatory authority over the purchasers of power in the open market,
 4 no workable mitigation is available or feasible.

5 **CEQA Conclusion:** Operation of the CVP is a federal activity beyond the control of any State agency
 6 such as DWR, and the power purchases by private entities or public utilities in the private
 7 marketplace necessitated by a reduction in available CVP-generated hydroelectric power are beyond
 8 the control of the State, just as they are beyond the control of Reclamation. For these reasons, there
 9 are no feasible mitigation measures that could reduce this potentially significant indirect impact,
 10 which is solely attributable to operations of the CVP and not the SWP, to a less than significant level.
 11 This impact is therefore determined to be significant and unavoidable.

12 **Impact AQ-24: Generation of Regional Criteria Pollutants from Implementation of CM2–CM11**

13 **NEPA Effects:** Implementation of CM2–CM11 could generate additional traffic on roads and
 14 highways in and around Suisun Marsh and the Yolo Bypass related to restoration or monitoring
 15 activities. Habitat restoration and enhancement activities that require physical changes or heavy-
 16 duty equipment would generate construction emissions through earthmoving activities and heavy-
 17 duty diesel-powered equipment. Habitat restoration and enhancement conservation measures are
 18 anticipated to include a number of activities generating traffic to transport material and workers to
 19 and from the construction sites, including the following.

- 20 ● Grading, excavating, and placing fill material.
- 21 ● Breaching, modifying, or removing existing levees and constructing new levees.
- 22 ● Modifying, demolishing, and removing existing infrastructure (e.g., buildings, roads, fences,
 23 electric transmission and gas lines, irrigation infrastructure).
- 24 ● Constructing new infrastructure (e.g., buildings, roads, fences, electric transmission and gas
 25 lines, irrigation infrastructure).

26 Operational emissions associated with CM2–CM11 would primarily result from vehicle trips for site
 27 inspections, monitoring, and routine maintenance. The intensity and frequency of vehicle trips
 28 associated with routine maintenance are assumed to be relatively minor. Because the specific areas
 29 and process for implementing CM2–CM11 has not been determined, this effect is evaluated
 30 qualitatively.

31 Table 22-29 summarizes potential construction and operational emissions that may be generated by
 32 implementation of CM2–CM11. Activities with the greatest potential to have short or long-term air
 33 quality effects are denoted with an asterisk (*).

34 CM2–CM11 restoration activities would occur in all air districts. Construction and operational
 35 emissions associated with the restoration and enhancement actions under Alternative 1A could
 36 potentially exceed applicable general conformity *de minimis* levels listed in Table 22-9 and
 37 applicable local thresholds listed in Table 22-8. The effect would vary according to the equipment
 38 used in construction of a specific conservation measure, the location and timing of the actions called
 39 for in the conservation measure, and the air quality conditions at the time of implementation; these
 40 effects would be evaluated and identified in the subsequent project-level environmental analysis
 41 conducted for the CM2–CM11 restoration and enhancement actions. The effect of increases in
 42 emissions during implementation of CM2–CM11 in excess of applicable general conformity *de*

1 *minimis* levels and air district regional thresholds (Table 22-8) could violate air basin SIPs and
 2 worsen existing air quality conditions. Mitigation Measure AQ-24 would be available to reduce this
 3 effect, but emissions would still be adverse.

4 **CEQA Conclusion:** Construction and operational emissions associated with the restoration and
 5 enhancement actions under Alternative 1A would result in a significant impact if the incremental
 6 difference, or increase, relative to Existing Conditions exceeds the applicable local air district
 7 thresholds shown in Table 22-8; these effects are expected to be further evaluated and identified in
 8 the subsequent project-level environmental analysis conducted for the CM2–CM11 restoration and
 9 enhancement actions. Mitigation Measure AQ-24 would be available to reduce this effect, but may
 10 not be sufficient to reduce emissions below applicable air quality management district thresholds
 11 (see Table 22-8). Consequently, this impact would be significant and unavoidable.

12 **Mitigation Measure AQ-24: Develop an Air Quality Mitigation Plan (AQMP) to Ensure Air**
 13 **District Regulations and Recommended Mitigation are Incorporated into Future**
 14 **Conservation Measures and Associated Project Activities**

15 BDCP proponents will develop an Air Quality Mitigation Plan (AQMP) prior to the
 16 commencement of any construction, operational, or other physical activities associated with
 17 CM2–CM11 that would involve adverse effects to air quality. The AQMP will be incorporated into
 18 the site-specific environmental review for all conservation measures or project activities. BDCP
 19 proponents will ensure that the following measures are implemented to reduce local and
 20 regional air quality impacts. Not all measures listed below may be feasible or applicable to each
 21 conservation measure. Rather, these measures serve as an overlying mitigation framework to be
 22 used for specific conservation measures. The applicability of measures listed below may also
 23 vary based on the lead agency, location, timing, available technology, and nature of each
 24 conservation measure.

- 25 ● Implement basic and enhanced dust control measures recommended by local air districts in
 26 the project-area. Applicable control measures may include, but are not limited to, watering
 27 exposed surfaces, suspended project activities during high winds, and planting vegetation
 28 cover in disturbed areas.
- 29 ● Require construction equipment be kept in proper working condition according to
 30 manufacturer's specifications.
- 31 ● Ensure emissions from all off-road diesel-powered equipment used to construct the project
 32 do not exceed applicable air district rules and regulations (e.g., nuisance rules, opacity
 33 restrictions).
- 34 ● Reduce idling time by either shutting equipment off when not in use or limiting the time of
 35 idling to less than required by the current statewide idling restriction.
- 36 ● Reduce criteria pollutant exhaust emissions by requiring the latest emissions control
 37 technologies. Applicable control measures may include, but are not limited to, engine
 38 retrofits, alternative fuels, electrification, and add-on technologies (e.g., DPF).
- 39 ● Undertake in good faith an effort to enter into a development mitigation contract with the
 40 local air district to offset criteria pollutant emissions below applicable air district thresholds
 41 through the payment of mitigation fees.

1 Implementation of this measure will reduce criteria pollutant emissions generated by construction,
2 operational, or other physical activities associated with CM2–CM11. The applicability of measures
3 listed above may vary based on the lead agency, location, timing, available technology, and nature of
4 each conservation measure. If the above measures do not contribute to emissions reductions,
5 guidelines will be developed to ensure that criteria pollutants generated during construction and
6 project operations are reduced to the maximum extent practicable.

1

Table 22-29. Summary of Conservation Measures and Potential Criteria Pollutant Emissions

Habitat Restoration Activity	Potential Emissions
Grading, excavating, and placing fill material.	Criteria pollutant and GHG exhaust emissions from grading equipment (e.g., grader, bulldozer) and haul trucks). Fugitive dust from excavation activities.
Breaching, modifying, or removing existing levees and construction of new levees.*	Criteria pollutant and GHG exhaust emissions from workboats and onshore construction equipment.
Modifying, demolishing, and removing existing infrastructure (e.g., buildings, roads, fences, electric transmission and gas lines, irrigation infrastructure).*	Criteria pollutant and GHG exhaust emissions from construction equipment (e.g., backhoe, bulldozer) required to demolish existing structures. Fugitive dust during demolition. Exhaust emissions from haul trucks required to remove demolished material from the project site. Potential reduction in criteria pollutants if diesel pumps are removed.
Constructing new infrastructure (e.g., buildings, roads, fences, electric transmission and gas lines, irrigation infrastructure). Removing existing vegetation and planting/seeding of vegetation.*	Criteria pollutant and GHG exhaust emissions from construction equipment (e.g., backhoe, small bulldozer). ROG emissions from paving activities. Fugitive dust emissions from trenching for electric transmission and gas lines. Potential increase or decrease in CO ₂ sequestration rates from land use change.
Controlling the establishment of nonnative vegetation to encourage the establishment of target native plant species.	Potential for criteria pollutant and GHG exhaust emissions from equipment used to modify existing habitat or remove nonnative vegetation.
Control of nonnative predator and competitor species (e.g., feral cats, rats, nonnative foxes).	Potential for criteria pollutant and GHG exhaust emissions from equipment used to modify existing habitat (e.g., install berms).
Minor grading, excavating, and filling to maintain infrastructure and habitat functions (e.g., levee maintenance; grading or placement of fill to eliminate fish stranding locations).	Criteria pollutant and GHG exhaust emissions from grading equipment (e.g., grader, bulldozer) and haul trucks. Fugitive dust from excavation activities.
Maintenance of infrastructure (e.g., buildings, roads, fences, electric transmission and gas lines, irrigation infrastructure, fences).	Criteria pollutant and GHG exhaust emissions from inspection vehicles. Potential for ROG emissions if architectural coatings are applied to existing buildings or roads are repaved.
Maintaining vegetation and vegetation structure (e.g., grazing, mowing, burning, trimming).	Criteria pollutant and GHG exhaust emissions from mowers, smoke, trimmers, and other vegetation management equipment.
Ongoing control of terrestrial and aquatic nonnative plant and wildlife species.	Potential for criteria pollutant and GHG exhaust emissions from equipment used to modify existing habitat or remove nonnative vegetation.
Note: Activities with the greatest potential to have short or long-term air quality effects are denoted with an asterisk (*).	

2

3 **Impact AQ-25: Exposure of Sensitive Receptors to Health Hazards from Localized Particulate**
4 **Matter, Carbon Monoxide, and Diesel Particulate Matter from Implementation of CM2–CM11**

5 Additional traffic and heavy-duty equipment required to implement CM2–CM11 would generate
6 emissions that could expose nearby receptors to local concentrations of PM, CO, and DPM. Fugitive

1 dust particulate matter concentrations are expected to be highest in the vicinity of restoration areas,
 2 particularly near those sites that require substantial earthmoving activities or site grading. The
 3 potential for CO hot-spots would be greatest along transportation routes used for site inspections,
 4 monitoring, and routine maintenance. DPM concentrations would likely be greatest along vehicle
 5 haul routes and adjacent to restoration sites that require substantial off-road equipment.

6 Sensitive receptors near restoration sites and haul routes could be exposed to increased PM, CO, and
 7 DPM concentrations. Because the extent of construction and operational activities is not known at
 8 this time, a determination of effects based on a quantitative analysis is not possible. Activities shown
 9 in Table 22-29 with the greatest potential to have short or long-term air quality impacts are also
 10 anticipated to have the greatest potential to expose receptors to substantial pollutant
 11 concentrations. The effect would vary according to the equipment used, the location and timing of
 12 the actions called for in the conservation measure, the meteorological and air quality conditions at
 13 the time of implementation, and the location of receptors relative to the emission source. Potential
 14 health effects would be evaluated and identified in the subsequent project-level environmental
 15 analysis conducted for the CM2–CM11 restoration and enhancement actions.

16 The effect of increases in PM, CO, or DPM (cancer and non-cancer-risk) in excess of applicable air
 17 district thresholds (Table 22-8) at receptor locations could result in adverse health impacts.
 18 Mitigation Measures AQ-24 and AQ-25 would be available to reduce this effect.

19 **CEQA Conclusion:** Construction and operational emissions associated with the restoration and
 20 enhancement actions under Alternative 1A would result in a significant impact if PM, CO, or DPM
 21 (cancer and non-cancer-risk) concentrations at receptor locations exceed the applicable local air
 22 district thresholds shown in Table 22-8; these effects are expected to be further evaluated and
 23 identified in the subsequent project-level environmental analysis conducted for the CM2–CM11
 24 restoration and enhancement actions. Mitigation Measures AQ-24 and AQ-25 would ensure localized
 25 concentrations at receptor locations would be below applicable air quality management district
 26 thresholds (see Table 22-8). Consequently, this impact would be less than significant.

27 **Mitigation Measure AQ-24: Develop an Air Quality Mitigation Plan (AQMP) to Ensure Air**
 28 **District Regulations and Recommended Mitigation are Incorporated into Future**
 29 **Conservation Measures and Associated Project Activities**

30 Please see Mitigation Measure AQ-24 under Impact AQ-24 in the discussion of Alternative 1A.

31 **Mitigation Measure AQ-25: Prepare a Project-Level Health Risk Assessment to Reduce**
 32 **Potential Health Risks from Exposure to Localized DPM and PM Concentrations**

33 The site-specific environmental review for all conservation measures will perform a detailed
 34 health risk assessment (HRA) if sensitive receptors are located within 0.50 mile of project
 35 activities. The half-mile buffer represents the furthest distance at which Plan Area air districts
 36 recommend performing a HRA as pollutant concentrations dissipate as a function of distance
 37 from the emissions source. The site-specific HRA will evaluate potential health risks to nearby
 38 sensitive receptors from exposure to DPM and PM (as recommended by the local air district's
 39 CEQA Guidelines) and ensure that impacts are below applicable air district health risk
 40 thresholds. If the HRA identifies health risks in excess of applicable air district health risk
 41 thresholds, additional mitigation and/or site design changes will be incorporated into the site-
 42 specific environmental review to ensure health risks are reduced below applicable air district
 43 health risk thresholds. Examples of potential additional mitigation include, but are not limited

1 to, use aftermarket equipment controls (e.g., diesel particulate filters), alternative fuels, and
 2 advanced engine technologies (e.g., Tier 4 engines), as well as construction of vegetative buffers
 3 and receptor relocation.

4 **Impact AQ-26: Creation of Potential Odors Affecting a Substantial Number of People from**
 5 **Implementation of CM2–CM11**

6 Implementation of CM2–CM11 will convert land types to increase available habitat for BDCP
 7 covered species (e.g., cultivated land converted to tidal natural communities). Diesel emissions from
 8 earthmoving equipment could generate temporary odors, but these would quickly dissipate and
 9 cease once construction is completed. Accordingly, construction activities associated with CM2–
 10 CM11 are not anticipated to result in nuisance odors.

11 Among the land use types affected by the program, the conservation measures would restore
 12 estuarine wetland and upland habitats, both of which can generate odors from natural processes.
 13 Odors from wetlands are typically caused from organic decomposition that releases hydrogen
 14 sulfide gas. Similar reactions take place in tidal mudflats due to anaerobic decomposition caused by
 15 bacteria (National Oceanic and Atmospheric Administration 2008). While restored land uses
 16 associated with the program have the potential to generate odors from natural processes, the
 17 emissions would be similar in origin and magnitude to the existing land use types in the restored
 18 area (e.g., managed wetlands). Moreover, specific odor effects would be evaluated and identified in
 19 the subsequent project-level environmental analysis conducted for the CM2–CM11 restoration and
 20 enhancement actions. Accordingly, odor-related effects associated with CM2–CM11 would not be
 21 adverse.

22 **CEQA Conclusion:** Alternative 1A would not result in the addition of major odor producing facilities.
 23 Diesel emissions during construction could generate temporary odors, but these would quickly
 24 dissipate and cease once construction is completed. Increases in wetland, tidal, and upland habitats
 25 may increase the potential for odors from natural processes. However, the origin and magnitude of
 26 odors would be similar to the existing land use types in the restored area (e.g., managed wetlands).
 27 Moreover, specific odor impacts would be evaluated and identified in the subsequent project-level
 28 environmental analysis conducted for the CM2–CM11 restoration and enhancement actions.
 29 Accordingly, the impact of exposure of sensitive receptors to potential odors would be less than
 30 significant. No mitigation is required.

31 **Impact AQ-27: Generation of Cumulative Greenhouse Gas Emissions from Implementation of**
 32 **CM2–CM11**

33 **NEPA Effects:** CM2–CM11 implemented under Alternative 1A would result in local GHG emissions
 34 from construction equipment and vehicle exhaust. Restoration activities with the greatest potential
 35 for emissions include those that break ground and require use of earthmoving equipment. The type
 36 of restoration action and related construction equipment use are shown in Table 22-29.
 37 Implementing CM2–CM11 would also affect long-term sequestration rates through land use changes,
 38 such as conversion of agricultural land to wetlands, inundation of peat soils, drainage of peat soils,
 39 and removal or planting of carbon-sequestering plants.

- 40 ● Restoration activities associated with Alternative 1A would create the following land types.
- 41 ● Up to 65,000 acres of tidal wetland habitat
- 42 ● Up to 5,000 acres of riparian habitat

- 1 • Up to 10,000 acres of seasonally inundated floodplain
- 2 • Up to 2,000 acres of grassland
- 3 • Up to 1,200 acres of nontidal marsh

4 An initial analysis of land cover/use changes associated with tidal and riparian habitat restoration
 5 indicates that these program elements could have a beneficial impact on GHG emissions in the
 6 California Delta. However, as discussed above, carbon flux from land use change is dynamic and
 7 extremely variable. For example, the carbon sequestration potential of saline marshes ranges from
 8 54 to 385 grams of CO₂ per square meter per year (Trulio 2007). Wetlands also sequester carbon
 9 dioxide, but at a much slower rate. While these land uses can sequester CO₂, they also produce CH₄.
 10 Since CH₄ is a far more potent GHG, when compared to CO₂, CH₄ production may overwhelm the
 11 benefits obtained from carbon sequestration (U.S. Climate Change Science Program 2007).

12 Without additional information on site-specific characteristics associated with each of the
 13 restoration components, a complete assessment of GHG flux from CM2–CM11 is currently not
 14 possible. The effect of carbon sequestration and CH₄ generation would vary by land use type, season,
 15 and chemical and biological characteristics; these effects would be evaluated and identified in the
 16 subsequent project-level environmental analysis conducted for the CM2–CM11 restoration and
 17 enhancement actions. Mitigation Measures AQ-24 and AQ-27 would be available to reduce this
 18 effect. However, due to the potential for increases in GHG emissions from construction and land use
 19 change, this effect would be adverse.

20 **CEQA Conclusion:** The restoration and enhancement actions under Alternative 1A could result in a
 21 significant impact if activities are inconsistent with applicable GHG reduction plans, do not
 22 contribute to a lower carbon future, or generate excessive emissions, relative to other projects
 23 throughout the state. These effects are expected to be further evaluated and identified in the
 24 subsequent project-level environmental analysis conducted for the CM2–CM11 restoration and
 25 enhancement actions. Mitigation Measures AQ-24 and AQ-27 would be available to reduce this
 26 impact, but may not be sufficient to reduce to a less-than-significant level. Consequently, this impact
 27 would be significant and unavoidable.

28 **Mitigation Measure AQ-24: Develop an Air Quality Mitigation Plan (AQMP) to Ensure Air**
 29 **District Regulations and Recommended Mitigation are Incorporated into Future**
 30 **Conservation Measures and Associated Project Activities**

31 Please see Mitigation Measure AQ-24 under Impact AQ-24 in the discussion of Alternative 1A.

32 **Mitigation Measure AQ-27: Prepare a Land Use Sequestration Analysis to Quantify and**
 33 **Mitigate (as Needed) GHG Flux Associated with Conservation Measures and Associated**
 34 **Project Activities**

35 BDCP proponents will prepare a land use sequestration analysis to evaluate GHG flux associated
 36 with implementation of CM2–CM11. The land use analysis will evaluate the one-time carbon
 37 storage loss associated with vegetation removal, soil carbon content, and existing and future
 38 with project GHG flux. In the event that the land use analysis demonstrates a net positive GHG
 39 flux, feasible strategies to reduce GHG emissions will be undertaken. To the extent feasible,
 40 mitigation shall require project design changes so that land uses that serve as carbon sinks (i.e.,
 41 result in net decreases in carbon) are not replaced with other uses that are sources (i.e., result in
 42 net increases in carbon) of GHG emissions.

1 **22.3.3.3 Alternative 1B—Dual Conveyance with East Alignment and**
2 **Intakes 1–5 (15,000 cfs; Operational Scenario A)**

3 As with Alternative 1A, a total of five intakes would be constructed (assumed to be Intakes 1–5).
4 Under Alternative 1B, no intermediate forebay would be constructed. The conveyance facility would
5 be a canal on the east side of the Sacramento River (Figures 3-4 and 3-5 in Chapter 3, *Description of*
6 *Alternatives*).

7 Construction and operation of Alternative 1B would require the use of electricity, which would be
8 supplied by the California electrical grid. Power plants located throughout the state supply the grid
9 with power, which will be distributed to the Study area to meet project demand. Power supplied by
10 statewide power plants will generate criteria pollutants. Because these power plants are located
11 throughout the state, criteria pollutant emissions associated with Alternative 1B electricity demand
12 cannot be ascribed to a specific air basin or air district within the Study area. Criteria pollutant
13 emissions from electricity consumption, which are summarized in Table 22-30, are therefore
14 provided for informational purposes only and are not included in the impact conclusion.

1
2**Table 22-30. Criteria Pollutant Emissions from Electricity Consumption: Construction and Net Project Operations, Alternative 1B (tons/year)^{a, b}**

Year	Analysis	ROG	CO	NO _x	PM10	PM2.5 ^c	SO ₂
2016	-	0	0	0	0	0	0
2017	-	0	0	0	0	0	0
2018	-	<1	<1	<1	<1	<1	<1
2019	-	<1	1	<1	<1	<1	<1
2020	-	<1	4	<1	<1	<1	2
2021	-	<1	10	1	1	1	4
2022	-	<1	13	1	1	1	6
2023	-	<1	12	1	1	1	5
2024	-	<1	12	1	1	1	5
2025	-	<1	8	1	1	1	4
2026	-	<1	3	<1	<1	<1	1
2027	-	<1	1	<1	<1	<1	<1
2028	-	<1	<1	<1	<1	<1	<1
2029	-	<1	<1	<1	<1	<1	<1
ELT	CEQA	2	15	211	18	18	89
LLT	NEPA	2	19	267	23	23	113
LLT	CEQA	1	7	101	9	9	43

NEPA = Compares criteria pollutant emissions after implementation of Alternative 1B to the No Action Alternative.

CEQA = Compares criteria pollutant emissions after implementation of Alternative 1B to Existing Conditions.

^a Emissions assume implementation of RPS (see Appendix 22A, *Air Quality Analysis Methodology*). Power plants that generate electricity for the proposed project would be subject to local air district permitting requirements, including standards to implement BACT to reduce criteria pollutant emissions.

^b Because GHG emissions are cumulative (see Section 22.3.2.1) and not evaluated at the local air basin or air district level, they are discussed in Impacts AQ-21 and AQ-22. The GHG analysis for SWP power utilizes actual and forecasted GHG emissions rates for the SWP system, which differs slightly from the above analysis. Statewide grid average emission factors were utilized for the above analysis as criteria pollutant emission factors for SWP were unavailable. Please also note that the above analysis does not account for additional renewable energy that will be procured through modifications to DWR's REPP (see Impact AQ-22). Accordingly, the emissions results presented above represent a conservative assessment of potential criteria pollutant emissions.

^c Emission factors for PM2.5 are currently unavailable. Consequently, PM2.5 emissions were assumed to equal PM10 emissions. Because PM2.5 represents a fraction of PM10, this approach represents a conservative assessment of PM2.5 emissions from electricity consumption.

3

1 Construction activities would generate emissions of ozone precursors (ROG and NO_x), CO, PM10,
2 PM2.5, and SO₂. Table 22-31 summarizes criteria pollutant emissions that would be generated in the
3 BAAQMD, SMAQMD, SJVAPCD, and YSAQMD in pounds per day and tons per year. Emissions
4 estimates include implementation of environmental commitments (see Appendix 3B, *Environmental*
5 *Commitments*). Although emissions are presented in different units (pounds and tons), the amounts
6 of emissions are identical (i.e., 2,000 pounds is identical to 1 ton). Summarizing emissions in both
7 pounds per day and tons per year is necessary to evaluate project-level effects against the
8 appropriate air district thresholds, which are given in both pounds and tons (see Table 22-8).

9 As shown in Appendix 22B, *Air Quality Assumptions*, construction activities during several phases
10 will likely occur concurrently. To ensure a conservative analysis, the maximum daily emissions
11 during these periods of overlap were estimated assuming all equipment would operate at the same
12 time—this gives the maximum total project-related air quality impact during construction.
13 Accordingly, the daily emissions estimates represent a conservative assessment of construction
14 impacts. Exceedances of the air district thresholds are shown in underlined text.
15

1 **Table 22-31. Criteria Pollutant Emissions from Construction of Alternative 1B (pounds/day and tons/year)**

Year	Maximum Daily Emissions (pounds/day)										Annual Emissions (tons/year)									
	Bay Area Air Quality Management District										Bay Area Air Quality Management District									
	ROG	NO _x	CO	PM10			PM2.5			SO ₂	ROG	NO _x	CO	PM10			PM2.5			SO ₂
			Exhaust	Dust	Total	Exhaust	Dust	Total				Exhaust	Dust	Total	Exhaust	Dust	Total			
2016	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
2017	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
2018	11	<u>219</u>	64	1	155	155	1	40	40	3	<1	3	1	<1	2	2	<1	1	1	<1
2019	15	<u>282</u>	86	1	194	195	1	50	51	3	1	10	4	<1	5	5	<1	1	1	<1
2020	11	<u>151</u>	64	1	82	83	1	21	22	1	1	11	6	<1	5	5	<1	1	1	<1
2021	15	<u>226</u>	87	1	134	135	1	34	35	2	1	13	7	<1	6	6	<1	1	1	<1
2022	30	<u>518</u>	180	2	348	350	2	89	91	6	1	12	6	<1	6	6	<1	2	2	<1
2023	<u>88</u>	<u>901</u>	512	6	470	476	6	109	113	9	4	37	25	<1	19	20	<1	4	4	<1
2024	<u>94</u>	<u>932</u>	548	7	486	493	7	108	115	9	8	64	48	1	24	25	1	5	5	1
2025	<u>73</u>	<u>662</u>	411	5	309	314	5	68	72	6	5	36	28	<1	14	14	<1	3	3	<1
2026	47	<u>446</u>	291	4	233	237	4	51	55	5	4	32	25	<1	13	14	<1	3	3	<1
2027	50	<u>456</u>	295	7	240	246	7	53	59	5	3	22	17	<1	12	12	<1	2	3	<1
2028	16	<u>231</u>	101	1	200	201	1	45	46	3	<1	2	1	<1	2	2	<1	<1	1	<1
2029	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<i>Thresholds</i>	<i>54</i>	<i>54</i>	<i>-</i>	<i>82</i>	<i>BMPs</i>	<i>-</i>	<i>54</i>	<i>BMPs</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>
Year	Sacramento Metropolitan Air Quality Management District										Sacramento Metropolitan Air Quality Management District									
	ROG	NO _x	CO	PM10			PM2.5			SO ₂	ROG	NO _x	CO	PM10			PM2.5			SO ₂
				Exhaust	Dust	Total	Exhaust	Dust	Total				Exhaust	Dust	Total	Exhaust	Dust	Total		
2016	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2017	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2018	173	<u>1,294</u>	1,313	20	594	614	20	92	112	6	8	54	56	1	27	28	1	4	5	<1
2019	241	<u>1,824</u>	1,695	29	714	740	28	112	138	8	18	134	126	2	50	52	2	8	10	1
2020	120	<u>1,109</u>	733	19	289	308	18	51	68	4	13	109	77	2	28	30	2	5	7	<1
2021	161	<u>1,468</u>	928	21	488	509	20	83	103	5	15	121	84	2	42	44	2	6	8	<1
2022	222	<u>2,166</u>	1,419	27	756	775	25	122	143	12	15	122	94	2	62	64	2	8	10	1
2023	383	<u>3,303</u>	2,471	41	1,101	1,136	39	173	208	29	31	239	209	3	92	95	3	12	15	1
2024	411	<u>3,609</u>	2,682	44	1,278	1,321	42	196	237	27	37	278	241	4	117	121	3	16	19	2
2025	364	<u>3,652</u>	2,527	39	1,459	1,498	38	207	244	25	19	141	131	2	72	74	2	10	12	1
2026	212	<u>1,534</u>	1,217	17	624	640	16	107	123	17	17	109	111	2	62	64	2	9	11	1
2027	225	<u>1,817</u>	1,423	21	670	692	21	112	132	26	18	129	117	2	73	75	2	10	12	1
2028	142	<u>1,068</u>	758	9	502	510	9	84	92	5	7	46	37	<1	26	26	<1	4	4	<1
2029	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<i>Thresholds</i>	<i>-</i>	<i>85</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>

Year	San Joaquin Valley Air Pollution Control District										San Joaquin Valley Air Pollution Control District									
	ROG	NO _x	CO	PM10			PM2.5			SO ₂	ROG	NO _x	CO	PM10			PM2.5			SO ₂
				Exhaust	Dust	Total	Exhaust	Dust	Total					Exhaust	Dust	Total	Exhaust	Dust	Total	
2016	0	0	0	0	29	29	0	4	4	0	0	0	0	2	2	0	<1	<1	0	
2017	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
2018	414	2,657	3,209	45	1,288	1,333	44	186	230	12	13	<u>74</u>	107	2	49	<u>51</u>	2	7	8	<1
2019	599	4,102	4,258	69	1,617	1,679	66	238	299	17	<u>46</u>	<u>327</u>	313	6	112	<u>118</u>	5	17	<u>23</u>	1
2020	244	2,128	1,456	39	434	473	37	72	109	6	<u>30</u>	<u>256</u>	174	5	49	<u>54</u>	5	8	13	1
2021	263	2,183	1,489	40	454	494	38	75	113	6	<u>33</u>	<u>273</u>	186	5	54	<u>59</u>	5	9	14	1
2022	276	2,198	1,512	41	466	507	39	76	115	6	<u>22</u>	<u>166</u>	119	3	38	<u>42</u>	3	6	9	<1
2023	167	1,181	1,107	16	424	432	15	61	68	4	13	<u>86</u>	88	1	32	<u>33</u>	1	5	6	<1
2024	179	1,313	1,156	13	360	373	12	52	64	5	11	<u>73</u>	74	1	26	<u>27</u>	1	4	5	<1
2025	7	41	49	<1	63	63	<1	10	10	<1	1	5	5	<1	8	8	<1	1	1	<1
2026	5	29	32	<1	33	33	<1	5	5	<1	<1	2	2	<1	3	3	<1	<1	<1	<1
2027	3	6	14	8	31	39	8	5	13	<1	<1	<1	1	<1	3	3	<1	<1	1	<1
2028	0	0	0	0	29	29	0	4	4	0	0	0	0	0	2	2	0	<1	<1	0
2029	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<i>Thresholds</i>	-	-	-	-	-	-	-	-	-	-	<i>10</i>	<i>10</i>	-	-	-	<i>15</i>	-	-	<i>15</i>	-
Year	Yolo Solano Air Quality Management District										Yolo Solano Air Quality Management District									
	ROG	NO _x	CO	PM10			PM2.5			SO ₂	ROG	NO _x	CO	PM10			PM2.5			SO ₂
				Exhaust	Dust	Total	Exhaust	Dust	Total					Exhaust	Dust	Total	Exhaust	Dust	Total	
2016	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2017	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2018	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2019	1	15	3	<1	4	4	<1	1	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
2020	1	15	3	<1	4	4	<1	1	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
2021	8	200	44	1	56	56	1	14	15	1	<1	2	<1	<1	1	1	<1	<1	<1	<1
2022	15	382	86	1	110	<u>111</u>	1	28	29	2	1	<u>16</u>	4	<1	5	5	<1	1	1	<1
2023	20	447	120	1	161	<u>162</u>	1	41	43	3	1	<u>14</u>	4	<1	5	5	<1	1	1	<1
2024	20	437	119	1	161	<u>162</u>	1	41	43	3	1	<u>14</u>	4	<1	5	5	<1	1	1	<1
2025	20	419	117	1	158	<u>159</u>	1	41	42	3	<1	9	3	<1	3	4	<1	1	1	<1
2026	13	268	77	1	104	<u>105</u>	1	27	28	2	<1	8	2	<1	3	3	<1	1	1	<1
2027	13	260	76	1	104	<u>105</u>	1	27	28	2	<1	<u>10</u>	3	<1	4	4	<1	1	1	<1
2028	13	252	75	1	102	<u>103</u>	1	26	27	2	<1	9	3	<1	4	4	<1	1	1	<1
2029	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<i>Thresholds</i>	-	-	-	-	-	<i>80</i>	-	-	-	-	<i>10</i>	<i>10</i>	-	-	-	-	-	-	-	-

1 Operation and maintenance activities under Alternative 1B would result in emissions of ROG, NO_x,
 2 CO, PM10, PM2.5, and SO₂. Emissions were quantified for both ELT and LT conditions, although
 3 activities would take place annually until project decommissioning. Future emissions, in general, are
 4 anticipated to lessen because of continuing improvements in vehicle and equipment engine
 5 technology.

6 Table 22-32 summarizes criteria pollutant emissions associated with operation of Alternative 1B in
 7 the BAAQMD, SMAQMD, and SJVAPCD in pounds per day and tons per year (no operational
 8 emissions would be generated in the YSAQMD). Although emissions are presented in different units
 9 (pounds and tons), the amounts of emissions are identical (i.e., 2,000 pounds is identical to 1 ton).
 10 Summarizing emissions in both pounds per day and tons per year is necessary to evaluate project-
 11 level effects against the appropriate air district thresholds, which are given in both pounds and tons
 12 (see Table 22-8).

13 **Table 22-32. Criteria Pollutant Emissions from Operation of Alternative 1B (pounds per day and**
 14 **tons per year)**

Condition	Maximum Daily Emissions (pounds/day)						Annual Emissions (tons/year)					
	Bay Area Air Quality Management District						Bay Area Air Quality Management District					
	ROG	NO _x	CO	PM10	PM2.5	SO ₂	ROG	NO _x	CO	PM10	PM2.5	SO ₂
ELT	1	5	10	3	1	<1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
LLT	1	4	10	3	1	<1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
<i>Thresholds</i>	<i>54</i>	<i>54</i>	<i>-</i>	<i>82</i>	<i>82</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>
	Sacramento Metropolitan Air Quality Management District						Sacramento Metropolitan Air Quality Management District					
	ROG	NO _x	CO	PM10	PM2.5	SO ₂	ROG	NO _x	CO	PM10	PM2.5	SO ₂
ELT	2	14	29	6	2	<1	0.18	1.07	2.30	0.36	0.11	0.01
LLT	2	11	27	6	1	<1	0.15	0.90	2.20	0.35	0.09	<0.01
<i>Thresholds</i>	<i>65</i>	<i>65</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>
	San Joaquin Valley Air Pollution Control District						San Joaquin Valley Air Pollution Control District					
	ROG	NO _x	CO	PM10	PM2.5	SO ₂	ROG	NO _x	CO	PM10	PM2.5	SO ₂
ELT	1	6	12	3	1	<1	<0.01	0.01	0.01	<0.01	<0.01	<0.01
LLT	1	4	11	3	1	<1	<0.01	<0.01	0.01	<0.01	<0.01	<0.01
<i>Thresholds</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>10</i>	<i>10</i>	<i>-</i>	<i>15</i>	<i>15</i>	<i>-</i>

15
 16 **Impact AQ-1: Generation of Criteria Pollutants in Excess of the SMAQMD Regional Thresholds**
 17 **during Construction of the Proposed Water Conveyance Facility**

18 **NEPA Effects:** As shown in Table 22-30, construction emissions would exceed SMAQMD's daily NO_x
 19 threshold for all years between 2018 and 2028, even with implementation of environmental
 20 commitments (see Appendix 3B, *Environmental Commitments*). All other pollutants would be below
 21 air district thresholds and therefore would not result in an adverse regional air quality effect. Since
 22 NO_x is a precursor to ozone and PM, exceedances of SMAQMD's daily NO_x threshold could impact
 23 both regional ozone and PM formation, which could worsen regional air quality and air basin
 24 attainment of the NAAQS and CAAQS.

1 While equipment could operate at any work area identified for this alternative, the highest level of
 2 NO_x emissions in the SMAQMD is expected to occur at those sites where the duration and intensity
 3 of construction activities would be greatest. This includes all intake and intake pumping plant sites
 4 along the east bank of the Sacramento River, as well as the canal, a siphon, and a tunnel segment
 5 under the Mokelumne River.

6 Environmental commitments outlined in Appendix 3B, *Environmental Commitments*, will reduce
 7 construction-related emissions; however, as shown in Table 22-30, NO_x emissions would still exceed
 8 SMAQMD's identified in Table 22-8 and result in an adverse effect to air quality. Mitigation Measures
 9 AQ-1a and AQ-1b would be available to reduce NO_x emissions, and would thus address regional
 10 effects related to secondary ozone and PM formation.

11 **CEQA Conclusion:** NO_x emissions generated during construction would exceed SMAQMD threshold
 12 identified in Table 22-8. Since NO_x is a precursor to ozone and PM, exceedances of SMAQMD's daily
 13 NO_x threshold could impact both regional ozone and PM formation. SMAQMD's regional emissions
 14 thresholds (Table 22-8) have been adopted to ensure projects do not hinder attainment of the
 15 CAAQS or NAAQS. The impact of generating NO_x emissions in excess of local air district thresholds
 16 would therefore violate applicable air quality standards in the Study area and could contribute to or
 17 worsen an existing air quality conditions. This impact would therefore be significant. Mitigation
 18 Measures AQ-1a and AQ-1b would be available to reduce NO_x emissions to a less-than-significant
 19 level by offsetting emissions to quantities below SMAQMD CEQA thresholds (see Table 22-8).

20 **Mitigation Measure AQ-1a: Mitigate and Offset Construction-Generated Criteria Pollutant**
 21 **Emissions within the SFNA to Net Zero (0) for Emissions in Excess of General Conformity**
 22 ***De Minimis* Thresholds (Where Applicable) and to Quantities below Applicable CEQA**
 23 **Thresholds for Other Pollutants**

24 Please see Mitigation Measure AQ-1a under Impact AQ-1 in the discussion of Alternative 1A.

25 **Mitigation Measure AQ-1b: Develop an Alternative or Complementary Offsite Mitigation**
 26 **Program to Mitigate and Offset Construction-Generated Criteria Pollutant Emissions**
 27 **within the SFNA to Net Zero (0) for Emissions in Excess of General Conformity *De Minimis***
 28 **Thresholds (Where Applicable) and to Quantities below Applicable CEQA Thresholds for**
 29 **Other Pollutants**

30 Please see Mitigation Measure AQ-1b under Impact AQ-1 in the discussion of Alternative 1A.

31 **Impact AQ-2: Generation of Criteria Pollutants in Excess of the YSAQMD Regional Thresholds**
 32 **during Construction of the Proposed Water Conveyance Facility**

33 **NEPA Effects:** As shown in Table 22-30, construction emissions would exceed YSAQMD regional
 34 thresholds for the following pollutants and years, even with implementation of environmental
 35 commitments (see Appendix 3B, *Environmental Commitments*). All other pollutants would be below
 36 air district thresholds and therefore would not result in an adverse air quality effect.

- 37 ● NO_x: 2022–2024 and 2027
- 38 ● PM₁₀: 2022–2028

39 Since NO_x is a precursor to ozone and NO_x is a precursor to PM, exceedances of YSAQMD's NO_x
 40 threshold could impact both regional ozone and PM formation, which could worsen regional air

1 quality and air basin attainment of the NAAQS and CAAQS. Similarly, exceedances of YSAQMD's
 2 PM10 threshold could impede attainment of the NAAQS and CAAQS for PM10. All emissions
 3 generated within YSAQMD are a result of haul truck movement for equipment and material delivery.

4 Environmental commitments outlined in Appendix 3B, *Environmental Commitments*, will reduce
 5 construction-related emissions; however, as shown in Table 22-31, NO_x and PM10 emissions would
 6 still exceed the applicable YSAQMD thresholds identified in Table 22-8 and result in an adverse
 7 regional effect to air quality. Mitigation Measures AQ-1a and AQ-1b are available to reduce NO_x and
 8 PM10 emissions, and would thus address regional effects related to secondary ozone and PM
 9 formation.

10 **CEQA Conclusion:** Emissions of NO_x and PM10 generated during construction would exceed
 11 YSAQMD's regional thresholds identified in Table 22-8. Since NO_x is a precursor to ozone and NO_x is
 12 a precursor to PM, exceedances of YSAQMD's NO_x threshold could impact both regional ozone and
 13 PM formation, which could worsen regional air quality and air basin attainment of the NAAQS and
 14 CAAQS. Similarly, exceedances of YSAQMD's PM10 threshold could impede attainment of the NAAQS
 15 and CAAQS for PM10. YSAQMD's regional emissions thresholds (Table 22-8) have been adopted to
 16 ensure projects do not hinder attainment of the CAAQS or NAAQS. The impact of generating NO_x and
 17 PM10 in excess of local air district regional thresholds would therefore violate applicable air quality
 18 standards in the study area and could contribute to or worsen an existing air quality conditions. This
 19 would be a significant impact. Mitigation Measures AQ-1a and AQ-1b would be available to reduce
 20 NO_x and PM10 emissions to a less-than-significant level by offsetting emissions to quantities below
 21 YSAQMD CEQA thresholds (see Table 22-8).

22 **Mitigation Measure AQ-1a: Mitigate and Offset Construction-Generated Criteria Pollutant**
 23 **Emissions within the SFNA to Net Zero (0) for Emissions in Excess of General Conformity**
 24 ***De Minimis* Thresholds (Where Applicable) and to Quantities below Applicable CEQA**
 25 **Thresholds for Other Pollutants**

26 Please see Mitigation Measure AQ-1a under Impact AQ-1 in the discussion of Alternative 1A.

27 **Mitigation Measure AQ-1b: Develop an Alternative or Complementary Offsite Mitigation**
 28 **Program to Mitigate and Offset Construction-Generated Criteria Pollutant Emissions**
 29 **within the SMAQMD/SFNA to Net Zero (0) for Emissions in Excess of General Conformity**
 30 ***De Minimis* Thresholds (Where Applicable) and to Quantities below Applicable SMAQMD**
 31 **CEQA Thresholds for Other Pollutants**

32 Please see Mitigation Measure AQ-1b under Impact AQ-1 in the discussion of Alternative 1A.

33 **Impact AQ-3: Generation of Criteria Pollutants in Excess of the BAAQMD Regional Thresholds**
 34 **during Construction of the Proposed Water Conveyance Facility**

35 **NEPA Effects:** As shown in Table 22-30, construction emissions would exceed BAAQMD's daily
 36 thresholds for the following pollutants and years, even with implementation of environmental
 37 commitments (see Appendix 3B, *Environmental Commitments*). All other pollutants would be below
 38 air district thresholds and therefore would not result in an adverse air quality effect.

- 39 ● ROG: 2023–2025
- 40 ● NO_x: 2018–2028

1 Since ROG and NO_x are precursors to ozone and NO_x is a precursor to PM, exceedances of BAAQMD's
 2 ROG and NO_x thresholds could impact both regional ozone and PM formation, which could worsen
 3 regional air quality and air basin attainment of the NAAQS and CAAQS.

4 While equipment could operate at any work area identified for this alternative, the highest level of
 5 ROG and NO_x emissions in the BAAQMD is expected to occur at those sites where the duration and
 6 intensity of construction activities would be greatest, including the site of the Byron Tract Forebay
 7 adjacent to and south of Clifton Court Forebay.

8 Environmental commitments outlined in Appendix 3B, *Environmental Commitments*, will reduce
 9 construction-related emissions; however, as shown in Table 22-30, ROG and NO_x emissions would
 10 still exceed BAAQMD's thresholds identified in Table 22-8 and result in a regional adverse effect to
 11 air quality. Mitigation Measures AQ-3a and AQ-3b are available to reduce ROG and NO_x emissions,
 12 and would thus address regional effects related to secondary ozone and PM formation.

13 **CEQA Conclusion:** Emissions of ROG and NO_x precursors generated during construction would
 14 exceed BAAQMD thresholds identified in Table 22-8. Since ROG and NO_x are precursors to ozone
 15 and NO_x is a precursor to PM, exceedances of BAAQMD's ROG and NO_x thresholds could impact both
 16 regional ozone and PM formation. BAAQMD's regional emissions thresholds (Table 22-8) have been
 17 adopted to ensure projects do not hinder attainment of the CAAQS or NAAQS. The impact of
 18 generating ROG and NO_x emissions in excess of local air district regional thresholds would therefore
 19 violate applicable air quality standards in the Plan Area and could contribute to or worsen an
 20 existing air quality conditions. This would be a significant impact. Mitigation Measures AQ-3a and
 21 AQ-3b would be available to reduce NO_x emissions to a less-than-significant level.

22 **Mitigation Measure AQ-3a: Mitigate and Offset Construction-Generated Criteria Pollutant**
 23 **Emissions within BAAQMD/SFBAAB to Net Zero (0) for Emissions in Excess of General**
 24 **Conformity *De Minimis* Thresholds (Where Applicable) and to Quantities below**
 25 **Applicable BAAQMD CEQA Thresholds for Other Pollutants**

26 Please see Mitigation Measure AQ-3a under Impact AQ-3 in the discussion of Alternative 1A.

27 **Mitigation Measure AQ-3b: Develop an Alternative or Complementary Offsite Mitigation**
 28 **Program to Mitigate and Offset Construction-Generated Criteria Pollutant Emissions**
 29 **within the BAAQMD/SFBAAB to Net Zero (0) for Emissions in Excess of General**
 30 **Conformity *De Minimis* Thresholds (Where Applicable) and to Quantities below**
 31 **Applicable BAAQMD CEQA Thresholds for Other Pollutants**

32 Please see Mitigation Measure AQ-3b under Impact AQ-3 in the discussion of Alternative 1A.

33 **Impact AQ-4: Generation of Criteria Pollutants in Excess of the SJVAPCD Regional Thresholds**
 34 **during Construction of the Proposed Water Conveyance Facility**

35 **NEPA Effects:** As shown in Table 22-30, construction emissions would exceed SJVAPCD's annual
 36 thresholds for the following years and pollutants, even with implementation of environmental
 37 commitments (see Appendix 3B, *Environmental Commitments*). All other pollutants would be below
 38 air district thresholds and therefore would not result in an adverse air quality effect.

- 39 ● ROG: 2019–2022
- 40 ● NO_x: 2018–2024

- 1 • PM10: 2018–2024
- 2 • PM2.5: 2019

3 Since ROG and NO_x are precursors to ozone and NO_x is a precursor to PM, exceedances of SJVAPCD's
4 ROG and NO_x thresholds could impact both regional ozone and PM formation, which could worsen
5 regional air quality and air basin attainment of the NAAQS and CAAQS. Similarly, exceedances of
6 SJVAPCD's PM10 and PM2.5 thresholds could impede attainment of the NAAQS and CAAQS for PM.

7 While equipment could operate at any work area identified for this alternative, the highest level of
8 ROG, NO_x, PM10, and PM2.5 emissions in the SJVAPCD are expected to occur at those sites where the
9 duration and intensity of construction activities would be greatest. This includes all temporary and
10 permanent utility sites, as well as all construction sites along the east conveyance alignment. PM10
11 emissions are expected to be greatest within the immediate vicinity of the concrete batching plants.
12 For a map of the proposed east alignment, see Mapbook Figure M3-2.

13 Environmental commitments outlined in Appendix 3B, *Environmental Commitments*, will reduce
14 construction-related emissions; however, as shown in Table 22-31, ROG, NO_x, PM10, and PM2.5
15 emissions would still exceed SJVAPCD's thresholds identified in Table 22-8 and result in a regional
16 adverse effect to air quality. Mitigation Measures AQ-4a and AQ-4b are available to reduce ROG, NO_x,
17 PM10, and PM2.5 emissions, and would thus address regional effects related to secondary ozone and
18 PM formation.

19 **CEQA Conclusion:** Emissions of ROG, NO_x, PM10, and PM2.5 generated during construction would
20 exceed SJVAPCD's regional significance thresholds identified in Table 22-8. Since ROG and NO_x are
21 precursors to ozone and NO_x is a precursor to PM, exceedances of SJVAPCD's ROG and NO_x
22 thresholds could impact both regional ozone and PM formation, which could worsen regional air
23 quality and air basin attainment of the NAAQS and CAAQS. Similarly, exceedances of SJVAPCD's
24 PM10 and PM2.5 thresholds could impede attainment of the NAAQS and CAAQS for PM10.
25 SJVAPCD's regional emissions thresholds (Table 22-8) have been adopted to ensure projects do not
26 hinder attainment of the CAAQS or NAAQS for ozone and PM. The impact of generating ROG, NO_x,
27 PM10, and PM2.5 in excess of local air district thresholds would therefore violate applicable air
28 quality standards in the Plan Area and could contribute to or worsen an existing air quality
29 conditions. This would be a significant impact. Mitigation Measures AQ-4a and AQ-4b would be
30 available to reduce emissions to a less-than-significant level by offsetting emissions to quantities
31 below SJVAPCD CEQA threshold (see Table 22-8).

32 **Mitigation Measure AQ-4a: Mitigate and Offset Construction-Generated Criteria Pollutant**
33 **Emissions within SJVAPCD/SJVAB to Net Zero (0) for Emissions in Excess of General**
34 **Conformity *De Minimis* Thresholds (Where Applicable) and to Quantities below**
35 **Applicable SJVAPCD CEQA Thresholds for Other Pollutants**

36 Please see Mitigation Measure AQ-4a under Impact AQ-4 in the discussion of Alternative 1A.

37 **Mitigation Measure AQ-4b: Develop an Alternative or Complementary Offsite Mitigation**
38 **Program to Mitigate and Offset Construction-Generated Criteria Pollutant Emissions**
39 **within the SJVAPCD/SJVAB to Net Zero (0) for Emissions in Excess of General Conformity**
40 ***De Minimis* Thresholds (Where Applicable) and to Quantities below Applicable SJVAPCD**
41 **CEQA Thresholds for Other Pollutants**

42 Please see Mitigation Measure AQ-4b under Impact AQ-4 in the discussion of Alternative 1A.

1 **Impact AQ-5: Generation of Criteria Pollutants in Excess of the SMAQMD Regional Thresholds**
 2 **from Operation and Maintenance of the Proposed Water Conveyance Facility**

3 **NEPA Effects:** Operations and maintenance in SMAQMD could include both routine activities and
 4 yearly maintenance. Daily activities at all pumping plants and intakes are covered by maintenance,
 5 management, repair, and operating crews. Yearly maintenance would include annual inspections
 6 and sediment removal (see Appendix 22A, *Air Quality Analysis Methodology*, for additional detail).
 7 The highest concentration of operational emissions in the SMAQMD is expected at intake and intake
 8 pumping plant sites along the east bank of the Sacramento River. As shown in Table 22-32,
 9 operation and maintenance activities under Alternative 1B would not exceed SMAQMD's regional
 10 thresholds of significance and there would be no adverse effect (see Table 22-8). Accordingly,
 11 project operations would not contribute to or worsen existing air quality exceedances. There would
 12 be no adverse effect.

13 **CEQA Conclusion:** Emissions generated during operation and maintenance activities would not
 14 exceed SMAQMD regional thresholds for criteria pollutants. SMAQMD's regional emissions
 15 thresholds (Table 22-8) have been adopted to ensure projects do not hinder attainment of the
 16 CAAQS. The impact of generating emissions in excess of local air district would therefore violate
 17 applicable air quality standards in the Study area and could contribute to or worsen an existing air
 18 quality conditions. Because project operations would not exceed SMAQMD regional thresholds, the
 19 impact would be less than significant. No mitigation is required.

20 **Impact AQ-6: Generation of Criteria Pollutants in Excess of the YSAQMD Regional Thresholds**
 21 **from Operation and Maintenance of the Proposed Water Conveyance Facility**

22 **NEPA Effects:** Alternative 1B would not construct any permanent features in the YSAQMD that
 23 would require routine operations and maintenance. No operational emissions would be generated
 24 in the YSAQMD. Consequently, operation of Alternative 1B would neither exceed the YSAQMD
 25 thresholds of significance nor result in an adverse effect on air quality.

26 **CEQA Conclusion:** No operational or maintenance emissions generated by the alternative would
 27 occur in YSAQMD. Accordingly, Alternative 1B would not contribute to or worsen existing air quality
 28 conditions. This impact would be less than significant. No mitigation is required.

29 **Impact AQ-7: Generation of Criteria Pollutants in Excess of the BAAQMD Regional Thresholds**
 30 **from Operation and Maintenance of the Proposed Water Conveyance Facility**

31 **NEPA Effects:** Operations and maintenance in BAAQMD could include annual inspections and
 32 sediment removal (see Appendix 22A, *Air Quality Analysis Methodology*, for additional detail). The
 33 highest concentration of operational emissions in the BAAQMD are expected at the Byron Tract
 34 Forebay (including control gates), which is adjacent to and south of Clifton Court Forebay. As shown
 35 in Table 22-32, operation and maintenance activities under Alternative 1B would not exceed
 36 BAAQMD's regional thresholds of significance (see Table 22-8). Thus, project operations would not
 37 contribute to or worsen existing air quality exceedances. There would be no adverse effect.

38 **CEQA Conclusion:** Emissions generated during operation and maintenance activities would not
 39 exceed BAAQMD regional thresholds for criteria pollutants. The BAAQMD's regional emissions
 40 thresholds (Table 22-8) have been adopted to ensure projects do not hinder attainment of the
 41 CAAQS. The impact of generating emissions in excess of local air district thresholds would violate
 42 applicable air quality standards in the Study area and could contribute to or worsen an existing air

1 quality conditions. Because project operations would not exceed BAAQMD regional thresholds, the
2 impact would be less than significant. No mitigation is required.

3 **Impact AQ-8: Generation of Criteria Pollutants in Excess of the SJVAPCD Regional Thresholds** 4 **from Operation and Maintenance of the Proposed Water Conveyance Facility**

5 **NEPA Effects:** Operations and maintenance in SJVAPCD could include annual inspections (see
6 Appendix 22A, *Air Quality Analysis Methodology*, for additional detail). The highest concentration of
7 operational emissions in the SJVAPCD is expected at routine inspection sites along the east canal
8 alignment. For a map of the proposed east alignment, see Mapbook Figure M3-2. As shown in Table
9 22-32, operation and maintenance activities under Alternative 1B would not exceed SJVAPCD's
10 regional thresholds of significance (see Table 22-8). Accordingly, project operations would not
11 contribute to or worsen existing air quality exceedances. There would be no adverse effect.

12 **CEQA Conclusion:** Emissions generated during operation and maintenance activities would not
13 exceed SJVAPCD's regional thresholds of significance. The SJVAPCD's regional emissions thresholds
14 (Table 22-8) have been adopted to ensure projects do not hinder attainment of the CAAQS. The
15 impact of generating emissions in excess of local air district thresholds would violate applicable air
16 quality standards in the Plan Area and could contribute to or worsen an existing air quality
17 conditions. Because project operations would not exceed SJVAPCD regional thresholds, the impact
18 would be less than significant. No mitigation is required.

19 **Impact AQ-9: Exposure of Sensitive Receptors to Health Hazards from Localized Particulate** 20 **Matter in Excess of SMAQMD's Health-Based Concentration Thresholds**

21 **NEPA Effects:** As shown in Table 22-31, construction would increase PM10 and PM2.5 emissions in
22 SMAQMD, which may pose inhalation-related health risks for receptors exposed to certain
23 concentrations.

24 PM2.5 and PM10 concentrations at sensitive receptors locations were assessed using the EPA's
25 AERMOD dispersion. The methodology described in Section 22.3.1.3 provides a more detailed
26 summary of the approach used to conduct the analysis. Appendix 22C, *Bay Delta Conservation Plan*
27 *Air Dispersion Modeling and Health Risk Assessment for Construction Emissions*, provides an in-depth
28 discussion of the methodology and results.

29 As shown in Table 22-33, all estimated annual PM10 and PM2.5 concentrations would be less than
30 SMAQMD's annual thresholds. However, the maximum predicted 24-hour PM10 concentration
31 exceeds SMAQMD's threshold of 2.5 µg/m³. Exceedances of the threshold would occur at 186
32 receptor locations near intakes and intake work areas. The exceedances would be temporary and
33 occur intermittently due to soil disturbance.

1 **Table 22-33. Alternative 1B PM10 and PM2.5 Concentration Results in SMAQMD**

Parameter	PM10		PM2.5	
	Annual ($\mu\text{g}/\text{m}^3$)	24-Hour ($\mu\text{g}/\text{m}^3$)	Annual ($\mu\text{g}/\text{m}^3$)	24-Hour ($\mu\text{g}/\text{m}^3$)
Maximum Value	0.5	<u>21.1</u>	0.1	3.5
<i>SMAQMD Threshold</i>	1	2.5	0.6	-

Appendix 22C, *Bay Delta Conservation Plan Air Dispersion Modeling and Health Risk Assessment for Construction Emissions*, includes modeling results for all receptors.
 $\mu\text{g}/\text{m}^3$ = micrograms per cubic meter

2

3 As discussed above, DWR has identified several environmental commitments to reduce
4 construction-related particulate matter in the SMAQMD (see Appendix 3B, *Environmental*
5 *Commitments*). While these commitments will reduce localized particulate matter emissions,
6 concentrations at the analyzed receptor locations would still exceed SMAQMD's 24-hour PM10
7 threshold. The receptors exposed to PM10 concentrations in excess of SMAQMD's threshold could
8 experience increased risk for adverse human health effects. Mitigation Measure AQ-9 is available to
9 address this effect.

10 **CEQA Conclusion:** Respirable particulates pose human health hazard by bypassing the defenses
11 within the mucous ciliary system and entering deep lung tissue. Construction of Alternative 1B
12 would result in PM10 concentrations at 94 receptor locations that are above the significance
13 thresholds established by the SMAQMD. As such, localized particulate matter concentrations at
14 analyzed receptors would result in significant human health impacts. Mitigation Measure AQ-9
15 outlines a tiered strategy to reduce PM10 concentrations and public exposure to a less-than-
16 significant level.

17 **Mitigation Measure AQ-9: Implement Measures to Reduce Re-Entrained Road Dust and**
18 **Receptor Exposure to PM2.5 and PM10**

19 Please see Mitigation Measure AQ-9 under Impact AQ-9 in the discussion of Alternative 1A.

20 **Impact AQ-10: Exposure of Sensitive Receptors to Health Hazards from Localized Particulate**
21 **Matter in Excess of YSAQMD's Health-Based Concentration Thresholds**

22 **NEPA Effects:** As shown in Table 22-31, construction would increase PM10 and PM2.5 emissions in
23 YSAQMD, which may pose inhalation-related health risks for receptors exposed to certain
24 concentrations.

25 PM2.5 and PM10 concentrations at sensitive receptors locations were assessed using the EPA's
26 AERMOD dispersion. The methodology described in Section 22.3.1.3 provides a more detailed
27 summary of the approach used to conduct the analysis. Appendix 22C, *Bay Delta Conservation Plan*
28 *Air Dispersion Modeling and Health Risk Assessment for Construction Emissions*, provides an in-depth
29 discussion of the methodology and results.

30 As shown in Table 22-34, maximum predicted PM2.5 and PM10 concentrations are less than
31 YSAQMD's adopted thresholds. The project would also implement all air district recommended
32 onsite fugitive dust controls, such as regular watering. Accordingly, this alternative's effect of
33 exposure of sensitive receptors to localized particulate matter concentrations would not be adverse.

1 **Table 22-34. Alternative 1B PM10 and PM2.5 Concentration Results in YSAQMD**

Parameter	PM10		PM2.5	
	Annual ($\mu\text{g}/\text{m}^3$)	24-Hour ($\mu\text{g}/\text{m}^3$)	Annual ($\mu\text{g}/\text{m}^3$)	24-Hour ($\mu\text{g}/\text{m}^3$)
Maximum Value	0.2	6.6	0.03	1.1
<i>YSAQMD Threshold</i>	20	50	12	35

Appendix 22C, *Bay Delta Conservation Plan Air Dispersion Modeling and Health Risk Assessment for Construction Emissions*, includes modeling results for all receptors.
 $\mu\text{g}/\text{m}^3$ = micrograms per cubic meter

2

3 **CEQA Conclusion:** Respirable particulates pose human health hazard by bypassing the defenses
4 within the mucous ciliary system and entering deep lung tissue. Construction of Alternative 1B
5 would result in PM2.5 and PM10 concentrations at receptor locations that are below the significance
6 thresholds adopted by the YSAQMD. As such, localized particulate matter concentrations at analyzed
7 receptors would not result in significant human health impacts. No mitigation is required.

8 **Impact AQ-11: Exposure of Sensitive Receptors to Health Hazards from Localized Particulate**
9 **Matter in Excess of BAAQMD's Health-Based Concentration Thresholds**

10 **NEPA Effects:** As shown in Table 22-30, construction would increase PM10 and PM2.5 emissions in
11 BAAQMD, which may pose inhalation-related health risks for receptors exposed to certain
12 concentrations.

13 PM2.5 and PM10 concentrations at sensitive receptors locations were assessed using the EPA's
14 AERMOD dispersion. The methodology described in Section 22.3.1.3 provides a more detailed
15 summary of the approach used to conduct the analysis. Appendix 22C, *Bay Delta Conservation Plan*
16 *Air Dispersion Modeling and Health Risk Assessment for Construction Emissions*, provides an in-depth
17 discussion of the methodology and results.

18 As shown in Table 22-35, maximum predicted PM2.5 concentrations are less than BAAQMD's
19 adopted threshold. The project would also implement all air district recommended onsite fugitive
20 dust controls, such as regular watering. Accordingly, this alternative's effect of exposure of sensitive
21 receptors to localized particulate matter concentrations would not be adverse.

22 **Table 22-35. Alternative 1B PM10 and PM2.5 Concentration Results in BAAQMD**

Parameter	PM10		PM2.5	
	Annual ($\mu\text{g}/\text{m}^3$)	24-Hour ($\mu\text{g}/\text{m}^3$)	Annual ($\mu\text{g}/\text{m}^3$)	24-Hour ($\mu\text{g}/\text{m}^3$)
Maximum Value	0.2	53	0.04	9
<i>BAAQMD Threshold</i>	-	-	0.3	-

Appendix 22C, *Bay Delta Conservation Plan Air Dispersion Modeling and Health Risk Assessment for Construction Emissions*, includes modeling results for all receptors.
 $\mu\text{g}/\text{m}^3$ = micrograms per cubic meter

23

24 **CEQA Conclusion:** Respirable particulates pose human health hazard by bypassing the defenses
25 within the mucous ciliary system and entering deep lung tissue. Construction of Alternative 1B
26 would result in PM2.5 and PM10 concentrations at receptor locations that are below the significance

1 thresholds established by the BAAQMD. As such, localized particulate matter concentrations at
2 analyzed receptors would not result in significant human health impacts. No mitigation is required.

3 **Impact AQ-12: Exposure of Sensitive Receptors to Health Hazards from Localized Particulate** 4 **Matter in Excess of SJVAPCD's Health-Based Concentration Thresholds**

5 **NEPA Effects:** As shown in Table 22-30, construction would increase PM10 and PM2.5 emissions in
6 SJVAPCD, which may pose inhalation-related health risks for receptors exposed to certain
7 concentrations.

8 PM2.5 and PM10 concentrations at sensitive receptors locations were assessed using the EPA's
9 AERMOD dispersion. The methodology described in Section 22.3.1.3 provides a more detailed
10 summary of the approach used to conduct the analysis. Appendix 22C, *Bay Delta Conservation Plan*
11 *Air Dispersion Modeling and Health Risk Assessment for Construction Emissions*, provides an in-depth
12 discussion of the methodology and results.

13 As shown in Table 22-36, maximum predicted annual PM2.5 and PM10 concentrations are less than
14 SJVAPCD's adopted thresholds. However, the 24-hour concentrations of PM10 and PM2.5 were
15 found to exceed the SJVAPCD's significance thresholds. A total of 108 receptor locations were found
16 to exceed the SJVAPCD's 24-hour PM10 significance threshold and two locations were found to
17 exceed the PM2.5 significance threshold. The primary emission sources that contribute toward the
18 exceedances are construction of the intakes.

19 As discussed above, DWR has identified several environmental commitments to reduce
20 construction-related particulate matter in the SJVAPCD (see Appendix 3B, *Environmental*
21 *Commitments*). While these commitments will reduce localized particulate matter emissions,
22 concentrations at receptor locations may still exceed SJVAPCD's 24-hour PM10 and PM2.5 threshold.
23 The receptors exposed to PM10 concentrations in excess of SJVAPCD's threshold could experience
24 increased risk for adverse human health effects. Mitigation Measure AQ-9 is available to address this
25 effect.

26 **Table 22-36. Alternative 1B PM10 and PM2.5 Concentration Results in SJVAPCD**

Parameter	PM10		PM2.5	
	Annual ($\mu\text{g}/\text{m}^3$)	24-Hour ($\mu\text{g}/\text{m}^3$)	Annual ($\mu\text{g}/\text{m}^3$)	24-Hour ($\mu\text{g}/\text{m}^3$)
Maximum Value	0.7	<u>88</u>	0.1	<u>13</u>
<i>SJVAPCD Threshold</i>	2.08	10.4	2.08	10.4

Appendix 22C, *Bay Delta Conservation Plan Air Dispersion Modeling and Health Risk Assessment for Construction Emissions*, includes modeling results for all receptors.
 $\mu\text{g}/\text{m}^3$ = micrograms per cubic meter

27
28 **CEQA Conclusion:** Respirable particulates pose human health hazard by bypassing the defenses
29 within the mucous ciliary system and entering deep lung tissue. Construction of Alternative 1B
30 would result in PM10 and PM2.5 concentrations at receptor locations that are above the significance
31 thresholds established by the SJVAPCD. As such, localized particulate matter concentrations at
32 analyzed receptors would result in significant human health impacts. Mitigation Measure AQ-9
33 outlines a tiered strategy to reduce PM10 concentrations and public exposure to a less-than-
34 significant level.

1 **Mitigation Measure AQ-9: Implement Measures to Reduce Re-Entrained Road Dust and**
 2 **Receptor Exposure to PM_{2.5} and PM₁₀**

3 Please see Mitigation Measure AQ-9 under Impact AQ-9 in the discussion of Alternative 1A.

4 **Impact AQ-13: Exposure of Sensitive Receptors to Health Hazards from Localized Carbon**
 5 **Monoxide**

6 **NEPA Effects:** Continuous engine exhaust may elevate localized CO concentrations. Receptors
 7 exposed to these CO “hot-spots” may have a greater likelihood of developing adverse health effects
 8 (as described in Section 22.1.2). CO hot-spots are typically observed at heavily congested
 9 intersections where a substantial number of gasoline-powered vehicles idle for prolonged durations
 10 throughout the day. Construction sites are less likely to result in localized CO hot-spots due to the
 11 nature of construction activities (Sacramento Metropolitan Air Quality Management District 2014),
 12 which normally utilize diesel-powered equipment for intermittent or short durations. Moreover,
 13 construction sites must comply with the Occupational Safety and Health Administration’s (OSHA) CO
 14 exposure standards for onsite workers. Unlike regional pollutants (e.g., ROG and NO_x), CO
 15 concentrations also dissipate as a function of distance and will therefore be lower at offsite receptor
 16 locations. Accordingly, given that construction activities typically do not result in CO hot-spots,
 17 onsite concentrations must comply with OSHA standards, and CO levels dissipate as a function of
 18 distance, equipment-generated CO emissions (see Table 22-30) are not anticipated to result in
 19 adverse health hazards to sensitive receptors.

20 Construction traffic may contribute to increased roadway congestion, which could lead to conditions
 21 conducive to CO hot-spot formation. As shown in Table 19-17, the highest peak hour traffic volumes
 22 under BPAQMD—11,968 vehicles per hour—would occur on westbound Interstate 80 between
 23 Suisun Valley Road and State Route 12. This is about half of the congested traffic volume modeled by
 24 BAAQMD (24,000 vehicles per hour) that would be needed to contribute to a localized CO hot-spot,
 25 and less than half of the traffic volume modeled by SMAQMD (31,600 vehicles per hour). The
 26 BAAQMD’s and SMAQMD’s CO screening criteria were developed based on County average vehicle
 27 fleets that are primarily comprised of gasoline vehicles. Construction vehicles would be
 28 predominantly diesel trucks, which generate fewer CO emissions per idle-hour and vehicle mile
 29 traveled than gasoline-powered vehicles. Accordingly, the air district screening thresholds provide a
 30 conservative evaluation threshold for the assessment of potential CO emissions impacts during
 31 construction.

32 Based on the above analysis, even if all 11,968 vehicles on the modeled traffic segment drove
 33 through the same intersection in the peak hour, CO concentrations adjacent to the traveled way
 34 would not exceed the CAAQS or NAAQS according to BAAQMD’s and SMAQMD’s screening criteria.
 35 Thus, construction traffic is not anticipated to result in adverse health hazards to sensitive
 36 receptors.

37 **CEQA Conclusion:** Continuous engine exhaust may elevate localized CO concentrations. Receptors
 38 exposed to these CO “hot-spots” may have a greater likelihood of developing adverse health effects.
 39 Construction sites are less likely to result in localized CO hot-spots due to the nature of construction
 40 activities (Sacramento Metropolitan Air Quality Management District 2014), which normally utilize
 41 diesel-powered equipment for intermittent or short durations. Moreover, construction sites must
 42 comply with the OSHA CO exposure standards for onsite workers. Accordingly, given that
 43 construction activities typically do not result in CO hot-spots, onsite concentrations must comply
 44 with OSHA standards, and CO levels dissipate as a function of distance, equipment-generated CO

emissions are not anticipated to result in significant health hazards to sensitive receptors. Similarly, peak-hour construction traffic on local roadways would not exceed BAAQMD's or SMAQMD's conservative screening criteria for the formation potential CO hot-spots. This impact would be less than significant. No mitigation is required.,.

Impact AQ-14: Exposure of Sensitive Receptors to Health Hazards from Diesel Particulate Matter in Excess of SMAQMD's Chronic Non-Cancer and Cancer Risk Thresholds

NEPA Effects: As shown in Table 22-30, construction of Alternative 1B would increase DPM emissions in SMAQMD, which poses inhalation-related chronic non-cancer hazard and cancer risks if adjacent receptors are exposed to significant DPM concentrations for prolonged durations.

Receptor exposure to construction DPM emissions was assessed by predicting the health risks in terms of excess cancer and non-cancer hazard impacts using the EPA's AERMOD dispersion modeling and guidance published by OEHHA. Based on HRA results detailed in Appendix 22C, *Bay Delta Conservation Plan Air Dispersion Modeling and Health Risk Assessment for Construction Emissions*, Alternative 1B would not exceed the SMAQMD's thresholds for chronic non-cancer or cancer risks (see Table 22-37), and thus, would not expose sensitive receptors to substantial pollutant concentrations. Therefore, this alternative's effect of exposure of sensitive receptors to DPM emissions and their health hazards during construction would not be adverse.

CEQA Conclusion: DPM generated during construction poses inhalation-related chronic non-cancer hazard and cancer risk if adjacent receptors are exposed to significant concentrations for prolonged durations. The DPM generated during Alternative 1B construction would not exceed the SMAQMD's chronic non-cancer or cancer thresholds, and thus would not expose sensitive receptors to substantial health hazards. Therefore, this impact for DPM emissions would be less than significant. No mitigation is required.

Table 22-37. Alternative 1B Health Hazards from DPM Exposure in the Sacramento Metropolitan Air Quality Management District

Parameter	Chronic Health Hazard	Cancer Health Risk
Maximum Value at MEI	0.003	9 per million
Thresholds	1	10 per million

Source: Appendix 22C, *Bay Delta Conservation Plan Air Dispersion Modeling and Health Risk Assessment for Construction Emissions*.

MEI = maximally exposed individual.

Impact AQ-15: Exposure of Sensitive Receptors to Health Hazards from Diesel Particulate Matter in Excess of YSAQMD's Chronic Non-Cancer and Cancer Risk Thresholds

NEPA Effects: As shown in Table 22-30, construction of Alternative 1B would increase DPM emissions in YSAQMD, which poses inhalation-related chronic non-cancer hazard and cancer risks if adjacent receptors are exposed to significant DPM concentrations for prolonged durations.

Receptor exposure to construction DPM emissions was assessed by predicting the health risks in terms of excess cancer and non-cancer hazard impacts using the EPA's AERMOD dispersion modeling and guidance published by OEHHA. Based on HRA results detailed in Appendix 22C, *Bay Delta Conservation Plan Air Dispersion Modeling and Health Risk Assessment for Construction*

1 *Emissions*, Alternative 1B would not exceed YSAQMD’s non-cancer or cancer health thresholds (see
 2 Table 22-38) and, thus, would not expose sensitive receptors to substantial pollutant
 3 concentrations. Therefore, this alternative’s effect of exposure of sensitive receptors to DPM
 4 emissions and their health hazards during construction would not be adverse.

5 **CEQA Conclusion:** DPM generated during construction poses inhalation-related chronic non-cancer
 6 hazard and cancer risk if adjacent receptors are exposed to significant concentrations for prolonged
 7 durations. The DPM generated during Alternative 1B construction would not exceed the YSAQMD’s
 8 chronic non-cancer or cancer thresholds, and thus would not expose sensitive receptors to
 9 substantial health hazards. Therefore, this impact for DPM emissions would be less than significant.
 10 No mitigation is required.

11 **Table 22-38. Alternative 1B Health Hazards from DPM Exposure in the Yolo-Solano Air Quality**
 12 **Management District**

Parameter	Chronic Health Hazard	Cancer Health Risk
Maximum Value	0.0014	4 per million
<i>YSAQMD Thresholds</i>	<i>1</i>	<i>10 per million</i>

Source: Appendix 22C, *Bay Delta Conservation Plan Air Dispersion Modeling and Health Risk Assessment for Construction Emissions*

Note: Emissions would not be generated in Yolo County. However, emissions from the adjacent Sacramento County could affect sensitive receptors in Yolo County.

13
 14 **Impact AQ-16: Exposure of Sensitive Receptors to Health Hazards from Diesel Particulate**
 15 **Matter in Excess of BAAQMD’s Chronic Non-Cancer and Cancer Risk Thresholds**

16 **NEPA Effects:** As shown in Table 22-30, construction would increase DPM emissions in the
 17 BAAQMD, particularly near sites involving the greatest duration and intensity of construction
 18 activities. DPM poses inhalation-related chronic non-cancer hazard and cancer risks if adjacent
 19 receptors are exposed to significant DPM concentrations for prolonged durations.

20 Receptor exposure to construction DPM emissions was assessed by predicting the health risks in
 21 terms of excess cancer and non-cancer hazard impacts using the EPA’s AERMOD dispersion
 22 modeling and guidance published by OEHHA. Based on the HRA results detailed in Appendix 22C,
 23 *Bay Delta Conservation Plan Air Dispersion Modeling and Health Risk Assessment for Construction*
 24 *Emissions*, Alternative 1B would not exceed the BAAQMD’s chronic non-cancer or cancer thresholds
 25 (see Table 22-39) and, thus, would not expose sensitive receptors to substantial pollutant
 26 concentrations. Therefore, this alternative’s effect of exposure of sensitive receptors to DPM
 27 emissions and their health hazards during construction would not be adverse.

28 **CEQA Conclusion:** DPM generated during construction poses inhalation-related chronic non-cancer
 29 hazard and cancer risk if adjacent receptors are exposed to significant concentrations for prolonged
 30 durations. The DPM generated during Alternative 1B construction would not exceed the BAAQMD’s
 31 chronic non-cancer or cancer thresholds. Therefore, this impact for DPM emissions would be less
 32 than significant. No mitigation is required.

1 **Table 22-39. Alternative 1B Health Hazards from DPM Exposure in the Bay Area Air Quality**
 2 **Management District**

Alternative 1B	Chronic Health Hazard	Cancer Health Risk
Maximum Value	0.0017	5 per million
<i>BAAQMD Thresholds</i>	1	10 per million

Source: Appendix 22C, *Bay Delta Conservation Plan Air Dispersion Modeling and Health Risk Assessment for Construction Emissions*

Note: Emissions would not be generated in Yolo County. However, emissions from the adjacent Sacramento County could affect sensitive receptors in Yolo County.

3
 4 **Impact AQ-17: Exposure of Sensitive Receptors to Health Hazards from Diesel Particulate**
 5 **Matter in Excess of SJVAPCD's Chronic Non-Cancer and Cancer Risk Thresholds**

6 **NEPA Effects:** As shown in Table 22-30, construction would result in an increase of DPM emissions
 7 in the SJVAPCD, particularly near sites involving the greatest duration and intensity of construction
 8 activities. DPM poses inhalation-related chronic non-cancer hazard and cancer risks if adjacent
 9 receptors are exposed to significant DPM concentrations for prolonged durations.

10 Receptor exposure to construction DPM emissions was assessed by predicting the health risks in
 11 terms of excess cancer and non-cancer hazard impacts using the EPA's AERMOD dispersion
 12 modeling and guidance published by OEHHA. Based on HRA results detailed in Appendix 22C, *Bay*
 13 *Delta Conservation Plan Air Dispersion Modeling and Health Risk Assessment for Construction*
 14 *Emissions*, Alternative 1B would exceed the SJVAPCD's cancer threshold at two receptors location in
 15 the middle of multiple project features (Table 22-40) and, thus, would expose sensitive receptors to
 16 substantial pollutant concentrations.

17 **Table 22-40. Alternative 1B Health Hazards from DPM Exposure in the San Joaquin Valley Air**
 18 **Pollution Control District**

Alternative 1B	Chronic Health Hazard	Cancer Health Risk
Maximum Value	0.004	<u>15 per million</u>
<i>SJVAPCD Thresholds</i>	1	10 per million

Source: Appendix 22C, *Bay Delta Conservation Plan Air Dispersion Modeling and Health Risk Assessment for Construction Emissions*

Note: Emissions would not be generated in Yolo County. However, emissions from the adjacent Sacramento County could affect sensitive receptors in Yolo County.

19
 20 As discussed above, DWR has identified several environmental commitments to reduce
 21 construction-related diesel particulate matter in the SJVAPCD (see Appendix 3B, Environmental
 22 Commitments). While these commitments will reduce localized diesel particulate matter emissions,
 23 cancer risk levels were found to exceed the significance threshold at some of the analyzed receptors
 24 and those locations could experience increased risk for adverse human health effects. Therefore, this
 25 alternative's effect of exposure of sensitive receptors to health hazards during construction would
 26 be adverse.

27 Mitigation Measure AQ-16 would be available to reduce exposure to substantial cancer risk by
 28 relocating affected receptors. Although Mitigation Measure AQ-16 would reduce the severity of this

1 effect, the BDCP proponents are not solely responsible for implementation of the measure. If a
 2 landowner chooses not to accept DWR's offer of relocation assistance, an adverse effect in the form
 3 excess cancer risk above air district thresholds would occur. Therefore, this effect would be adverse.
 4 If, however, all landowners accept DWR's offer of relocation assistance, effects would not be
 5 adverse.

6 **CEQA Conclusion:** DPM generated during construction poses inhalation-related chronic non-cancer
 7 hazard and cancer risk if adjacent receptors are exposed to significant concentrations for prolonged
 8 durations. The DPM generated during Alternative 1B construction would exceed the SJVAPCD's
 9 cancer threshold at two receptor locations, and thus would expose sensitive receptors to substantial
 10 pollutant concentrations. Therefore, this impact for DPM emissions would be significant.

11 Mitigation Measure AQ-16 would be available to reduce exposure to substantial cancer risk by
 12 relocating affected receptors. Although Mitigation Measure AQ-16 would reduce the severity of this
 13 effect, the BDCP proponents are not solely responsible for implementation of the measure. If a
 14 landowner chooses not to accept DWR's offer of relocation assistance, a significant impact in the
 15 form excess cancer risk above air district thresholds would occur. Therefore, this effect would be
 16 significant and unavoidable. If, however, all landowners accept DWR's offer of relocation assistance,
 17 the impact would be less than significant.

18 **Mitigation Measure AQ-16: Relocate Sensitive Receptors to Avoid Excess Cancer Risk**

19 Please see Mitigation Measure AQ-16 under Impact AQ-16 in the discussion of Alternative 1A.

20 **Impact AQ-18: Exposure of Sensitive Receptors to *Coccidioides immitis* (Valley Fever)**

21 **NEPA Effects:** As discussed under Alternative 1A, earthmoving activities during construction could
 22 release *C. immitis* spores if filaments are present and other soil chemistry and climatic conditions
 23 are conducive to spore development. Receptors adjacent to the construction area may therefore be
 24 exposed to increase risk of inhaling *C. immitis* spores and subsequent development of Valley Fever.
 25 Dust-control measures are the primary defense against infection (United States Geological Survey
 26 2000). Implementation of advanced air-district recommended fugitive dust controls outlined in
 27 Appendix 3B, *Environmental Commitments*, would avoid dusty conditions and reduce the risk of
 28 contracting Valley Fever through routine watering and other controls. Therefore, this alternative's
 29 effect of exposure of sensitive receptors to increased Valley Fever risk during construction would
 30 not be adverse.

31 **CEQA Conclusion:** Construction of the water conveyance facility would involve earthmoving
 32 activities that could release *C. immitis* spores if filaments are present and other soil chemistry and
 33 climatic conditions are conducive to spore development. Receptors adjacent to the construction area
 34 may therefore be exposed to increase risk of inhaling *C. immitis* spores and subsequent development
 35 of Valley Fever. Implementation of air-district recommended fugitive dust controls outlined in
 36 Appendix 3B, *Environmental Commitments*, would avoid dusty conditions and reduce the risk of
 37 contracting Valley Fever through routine watering and other controls. Therefore, this impact would
 38 be less than significant. No mitigation is required.

1 **Impact AQ-19: Creation of Potential Odors Affecting a Substantial Number of People during**
 2 **Construction or Operation of the Proposed Water Conveyance Facility**

3 **NEPA Effects:** As discussed under Alternative 1A, odors from construction activities would be
 4 localized and generally confined to the immediate area surrounding the construction site. Moreover,
 5 odors would be temporary and localized, and they would cease once construction activities have
 6 been completed. Thus, it is not anticipated that construction of CM1 would create objectionable
 7 odors from construction equipment or asphalt paving.

8 Construction of the water conveyance facility would require removal of subsurface material during
 9 tunnel excavation and sediment removal. As discussed under Alternative 1A, geotechnical tests
 10 indicate that VOC levels in Plan Area soils are below the method detection limits, indicating that
 11 organic decay of exposed RTM and sediment will be relatively low (URS 2014). Moreover, drying
 12 and stockpiling of the removed RTM and sediment will occur under aerobic conditions, which will
 13 further limit any potential decomposition and associated malodorous products. Accordingly, it is not
 14 anticipated that tunnel and sediment excavation would create objectionable odors.

15 Typical facilities known to produce odors include landfills, wastewater treatment plants, food
 16 processing facilities, and certain agricultural activities. Alternative 1B would not result in the
 17 addition of facilities associated with odors, and as such, long-term operation of the water
 18 conveyance facility would not result in objectionable odors.

19 **CEQA Conclusion:** Alternative 1B would not result in the addition of major odor producing facilities.
 20 Diesel emissions during construction could generate temporary odors, but these would quickly
 21 dissipate and cease once construction is completed. Likewise, potential odors generated during
 22 asphalt paving would be addressed through mandatory compliance with air district rules and
 23 regulations. While tunnel excavation would unearth substantial quantities of RTM, geotechnical
 24 tests indicate that soils in the Plan Area have relatively low organic constituents. Moreover, drying
 25 and stockpiling of the removed RTM will occur under aerobic conditions, which will further limit
 26 any potential decomposition and associated malodorous products. Accordingly, the impact of
 27 exposure of sensitive receptors to potential odors would be less than significant. No mitigation is
 28 required.

29 **Impact AQ-20: Generation of Criteria Pollutants in the Excess of Federal *De Minimis***
 30 **Thresholds from Construction and Operation and Maintenance of the Proposed Water**
 31 **Conveyance Facility**

32 **NEPA Effects:** EPA's General Conformity Rule (40 CFR Parts 51 and 93) only applies to Federal
 33 actions that are taken in EPA-designated "nonattainment" or "maintenance" areas. Accordingly, as
 34 outlined in Section III.A of the General Conformity Rule, "only actions which cause emissions in
 35 designated nonattainment and maintenance areas are subject to the regulations". Criteria pollutant
 36 emissions resulting from construction and operation of Alternative 1B in the SFNA, SJVAB, and
 37 SFBAAB are presented in Table 22-41. Exceedances of the federal *de minimis* thresholds are shown
 38 in underlined text.

39 **Sacramento Federal Nonattainment Area**

40 As shown in Table 22-41, implementation of Alternative 1B would exceed the following SFNA
 41 federal *de minimis* thresholds:

- 42 ● ROG: 2023–2024

- 1 • NO_x: 2018–2028
- 2 • PM₁₀: 2024

3 ROG and NO_x are precursors to ozone and NO_x is a precursor to PM, for which the SFNA is in
 4 nonattainment for the NAAQS. Sacramento County is also a maintenance area for the PM₁₀ NAAQS.
 5 Since project emissions exceed the federal *de minimis* thresholds for ROG, NO_x, and PM₁₀, a general
 6 conformity determination must be made to demonstrate that total direct and indirect emissions of
 7 ROG, NO_x, and PM₁₀ would conform to the appropriate SFNA SIP for each year of construction in
 8 which the *de minimis* thresholds are exceeded.

9 NO_x is also a precursor to PM and can contribute to PM formation. As discussed above, Sacramento
 10 County is currently designated maintenance for the PM₁₀ NAAQS and portions of the SVAB are
 11 designated nonattainment for the PM_{2.5} NAAQS. NO_x emissions in excess of 100 tons per year in
 12 Sacramento County trigger a secondary PM₁₀ precursor threshold, whereas NO_x emissions in excess
 13 of 100 tons per year in the SVAB trigger a secondary PM_{2.5} precursor threshold. Since NO_x
 14 emissions can contribute to PM formation, NO_x emissions in excess of these secondary precursor
 15 thresholds could conflict with the applicable PM₁₀ and PM_{2.5} SIPs. Accordingly, NO_x offsets pursued
 16 for the purposes of general conformity for those years in which NO_x emissions exceed 100 tons must
 17 occur within the federally designated PM_{2.5} nonattainment and PM₁₀ maintenance areas of the
 18 SVAB.

19 As shown in Table 22-31, NO_x emissions generated by construction activities in SMAQMD
 20 (Sacramento County) would exceed 100 tons per year between 2019 and 2027. The project
 21 therefore triggers the secondary PM₁₀ precursor threshold, requiring all NO_x offsets for 2019
 22 through 2027 to occur within Sacramento County.

23 Given the magnitude of NO_x emissions and the limited geographic scope available for offsets in 2019
 24 through 2027 (Sacramento County), neither Mitigation Measures AQ-1a nor 1b could feasibly reduce
 25 NO_x emissions to net zero for the purposes of general conformity.²⁷ This impact would be adverse.
 26 In the event that Alternative 1B is selected as the APA, Reclamation, USFWS, and NMFS would need
 27 to demonstrate that conformity is met for NO_x and secondary PM₁₀ formation through a local air
 28 quality modeling analysis (i.e., dispersion modeling) or other acceptable methods to ensure project
 29 emissions do not cause or contribute to any new violations of the NAAQS or increase the frequency
 30 or severity of any existing violations.

31 **Mitigation Measure AQ-1a: Mitigate and Offset Construction-Generated Criteria Pollutant**
 32 **Emissions within the SFNA to Net Zero (0) for Emissions in Excess of General Conformity**
 33 ***De Minimis* Thresholds (Where Applicable) and to Quantities below Applicable CEQA**
 34 **Thresholds for Other Pollutants**

35 Please see Mitigation Measure AQ-1a under Impact AQ-1 in the discussion of Alternative 1A.

36 **Mitigation Measure AQ-1b: Develop an Alternative or Complementary Offsite Mitigation**
 37 **Program to Mitigate and Offset Construction-Generated Criteria Pollutant Emissions**

²⁷ The secondary PM precursor thresholds are triggered through the General Conformity Regulation (40 CFR 93.153 (a)(1)). Accordingly, confinement of the geographic scope for available offsets only applies to the General Conformity determination and does not influence mitigation feasibility for Impacts AQ-1 or AQ-28.

1 **within the SFNA to Net Zero (0) for Emissions in Excess of General Conformity *De Minimis***
2 **Thresholds (Where Applicable) and to Quantities below Applicable CEQA Thresholds for**
3 **Other Pollutants**

4 Please see Mitigation Measure AQ-1b under Impact AQ-1 in the discussion of Alternative 1A.

1 **Table 22-41. Criteria Pollutant Emissions from Construction and Operation of Alternative 1B in**
 2 **Nonattainment and Maintenance Areas of the SFNA, SJVAB, and SFBAAB (tons/year)**

Year	Sacramento Federal Nonattainment Area					
	ROG	NO _x ^a	CO ^b	PM10 ^c	PM2.5	SO ₂
2016	0	0	0	0	0	0
2017	0	0	0	0	0	0
2018	8	<u>54</u>	0	28	5	<1
2019	18	<u>135</u>	1	52	10	1
2020	13	<u>109</u>	1	30	7	<1
2021	15	<u>123</u>	2	44	9	<1
2022	16	<u>138</u>	6	64	11	1
2023	<u>31</u>	<u>252</u>	6	95	16	2
2024	<u>37</u>	<u>292</u>	6	<u>121</u>	21	2
2025	20	<u>151</u>	4	74	13	1
2026	17	<u>117</u>	3	64	11	1
2027	18	<u>139</u>	4	75	13	1
2028	7	<u>55</u>	5	26	5	<1
2029	0	0	0	0	0	0
ELT	0.18	1.07	2.30	0.36	0.11	0.01
LLT	0.15	0.90	2.20	0.35	0.09	<0.01
<i>De Minimis</i>	<i>25</i>	<i>25</i>	<i>100</i>	<i>100</i>	<i>100</i>	<i>100</i>
Year	San Joaquin Valley Air Basin					
	ROG	NO _x ^a	CO ^b	PM10	PM2.5	SO ₂
2016	0	0	0	2	<1	0
2017	0	0	0	0	0	0
2018	<u>13</u>	<u>74</u>	<1	51	8	<1
2019	<u>46</u>	<u>327</u>	<1	<u>118</u>	23	1
2020	<u>30</u>	<u>256</u>	<1	54	13	1
2021	<u>33</u>	<u>273</u>	<1	59	14	1
2022	<u>22</u>	<u>166</u>	<1	42	9	<1
2023	<u>13</u>	<u>86</u>	<1	33	6	<1
2024	<u>11</u>	<u>73</u>	<1	27	5	<1
2025	1	5	<1	8	1	<1
2026	<1	2	<1	3	0	<1
2027	<1	<1	<1	3	1	<1
2028	0	0	0	2	<1	0
2029	0	0	0	0	0	0
ELT	0.00	0.01	0.01	0.00	0.00	0.00
LLT	0.00	0.00	0.01	0.00	0.00	0.00
<i>De Minimis</i>	<i>10</i>	<i>10</i>	<i>100</i>	<i>100</i>	<i>100</i>	<i>100</i>

Year	San Francisco Bay Area Air Basin					
	ROG	NO _x ^a	CO ^b	PM10 ^d	PM2.5	SO ₂
2016	0	0	0	-	0	0
2017	0	0	0	-	0	0
2018	<1	3	1	-	1	<1
2019	1	10	2	-	1	<1
2020	1	11	2	-	1	<1
2021	1	13	2	-	1	<1
2022	1	12	2	-	2	<1
2023	4	37	5	-	4	<1
2024	8	64	5	-	5	1
2025	5	36	3	-	3	<1
2026	4	32	3	-	3	<1
2027	3	22	2	-	3	<1
2028	<1	2	1	-	1	<1
2029	0	0	0	-	0	0
ELT	0.00	0.00	0.00	-	0.00	0.00
LLT	0.00	0.00	0.00	-	0.00	0.00
<i>De Minimis</i>	<i>100</i>	<i>100</i>	<i>100</i>	<i>-</i>	<i>100</i>	<i>100</i>

Notes

- ^a NO_x emissions in excess of 100 tons per year within federally designated PM10 and PM2.5 nonattainment or maintenance areas trigger a secondary PM10 and PM2.5 precursor threshold. NO_x emissions in excess of this secondary threshold could conflict with the applicable PM10 and PM2.5 SIPs. Accordingly, NO_x offsets pursued for the purposes of general conformity for those years in which NO_x emissions exceed 100 tons must occur within the federally designated PM2.5 nonattainment and PM10 maintenance areas, as applicable.
- ^b The proposed water conveyance facility is located within a federally designated CO attainment area. Accordingly, CO emissions generated by construction of CM1 are not subject to the General Conformity Rule and are excluded from the emissions summary and general conformity analysis (40 CFR Part 51 and 93, Section III.A). Emissions presented in the table are limited those generated by haul trucks, which would occur in federally designated CO maintenance area.
- ^c There are no federally designated PM10 maintenance areas in Yolo County. Accordingly, PM10 emissions generated by construction of CM1 in Yolo County are not subject to the General Conformity Rule and are excluded from the emissions summary and general conformity analysis for the SFNA (40 CFR Part 51 and 93, Section III.A). Emissions presented in the table are limited those generated within Sacramento County.
- ^c There are no federally designated PM10 nonattainment or maintenance areas in the SFBAAB. Accordingly, PM10 emissions generated by construction of CM1 are not subject to the General Conformity Rule and are excluded from the emissions summary and general conformity analysis (40 CFR Part 51 and 93, Section III.A).

1

2 **San Joaquin Valley Air Basin**

3 As shown in Table 22-41, implementation of Alternative 1B would exceed the following SJVAB
4 federal *de minimis* thresholds:

- 5 • ROG: 2018–2024

- 1 • NO_x: 2018–2024
- 2 • PM₁₀: 2019

3 ROG and NO_x are precursors to ozone and NO_x is a precursor to PM, for which the SJVAB is in
 4 nonattainment for the NAAQS. The SJVAB is also a maintenance area for the PM₁₀ NAAQS. Since
 5 project emissions exceed the federal *de minimis* threshold for ROG, NO_x, and PM₁₀, a general
 6 conformity determination must be made to demonstrate that total direct and indirect emissions of
 7 ROG, NO_x, and PM₁₀ would conform to the appropriate SJVAB SIP for each year of construction in
 8 which the *de minimis* thresholds are exceeded.

9 NO_x is also a precursor to PM and can contribute to PM formation. As discussed above, the SJVAB is
 10 currently designated maintenance for the PM₁₀ NAAQS and nonattainment for the PM_{2.5} NAAQS.
 11 NO_x emissions in excess of 100 tons per year trigger a secondary PM precursor threshold, and could
 12 conflict with the applicable PM₁₀ and PM_{2.5} SIPs. As shown in Table 22-41, NO_x emissions
 13 generated by construction activities in the SJVAB would exceed 100 tons per year between 2019 and
 14 2022. NO_x offsets pursued for the purposes of general conformity for those years in which NO_x
 15 emissions exceed 100 tons must occur within the federally designated PM_{2.5} nonattainment and
 16 PM₁₀ maintenance areas of the SJVAB, which are consistent with the larger nonattainment
 17 boundary for ozone.

18 As shown in Appendix 22E, *General Conformity Determination*, Attachment 22E-1, SJVAPCD confirms
 19 that sufficient emissions reduction credits would be available to fully offset ROG, NO_x, and PM₁₀
 20 emissions in excess of the federal *de minimis* thresholds zero through implementation of Mitigation
 21 Measures AQ-4a and 4b. Mitigation Measures AQ-4a and 4b will ensure the requirements of the
 22 mitigation and offset program are implemented and conformity requirements for ROG, NO_x, and
 23 PM₁₀ are met, should Alternative 1B be selected as the APA.

24 **Mitigation Measure AQ-4a: Mitigate and Offset Construction-Generated Criteria Pollutant**
 25 **Emissions within SJVAPCD/SJVAB to Net Zero (0) for Emissions in Excess of General**
 26 **Conformity *De Minimis* Thresholds (Where Applicable) and to Quantities below**
 27 **Applicable SJVAPCD CEQA Thresholds for Other Pollutants**

28 Please see Mitigation Measure AQ-4a under Impact AQ-4 in the discussion of Alternative 1A.

29 **Mitigation Measure AQ-4b: Develop an Alternative or Complementary Offsite Mitigation**
 30 **Program to Mitigate and Offset Construction-Generated Criteria Pollutant Emissions**
 31 **within the SJVAPCD/SJVAB to Net Zero (0) for Emissions in Excess of General Conformity**
 32 ***De Minimis* Thresholds (Where Applicable) and to Quantities below Applicable SJVAPCD**
 33 **CEQA Thresholds for Other Pollutants**

34 Please see Mitigation Measure AQ-4b under Impact AQ-4 in the discussion of Alternative 1A.

35 ***San Francisco Bay Area Air Basin***

36 As shown in Table 22-41, implementation of Alternative 1B would not exceed any of the SFBAAB
 37 federal *de minimis* thresholds. Accordingly, a general conformity determination is not required as
 38 total direct and indirect emissions would conform to the appropriate SFBAAB SIPs.

39 ***CEQA Conclusion:*** SFNA and SJVAB are classified as nonattainment or maintenance areas with
 40 regard to the ozone and PM₁₀ NAAQS, and the impact of increases in criteria pollutant emissions

1 above the air basin *de minimis* thresholds could conflict with or obstruct implementation of the
2 applicable air quality plans. Since construction emissions in the SFNA and SJVAB would exceed the
3 *de minimis* thresholds for ROG, NO_x, and PM10, this impact would be significant.

4 Mitigation Measures AQ-4a and AQ-4b would ensure project emissions would not result in an
5 increase in regional ROG, NO_x, or PM10 in the SJVAB. These measures would therefore ensure total
6 direct and indirect ROG, NO_x, and PM10 emissions generated by the project would conform to the
7 appropriate SJVAB SIPs by offsetting the action's emissions in the same or nearby area to net zero.
8 Accordingly, impacts would be less than significant with mitigation in the SJVAB.

9 Although Mitigation Measures AQ-1a and AQ-1b would reduce NO_x in the SFNA, given the magnitude
10 of NO_x emissions and the limited geographic scope available for offsets (Sacramento County),
11 neither measure could feasibly reduce NO_x emissions to net zero for the purposes of general
12 conformity. This impact would be significant and unavoidable in the SFNA.

13 Emissions generated within the SFBAAB would not exceed the SFBAAB *de minimis* thresholds and
14 would therefore conform to the appropriate SFBAAB SIPs. No mitigation is required.

15 **Impact AQ-21: Generation of Cumulative Greenhouse Gas Emissions during Construction of** 16 **the Proposed Water Conveyance Facility**

17 **NEPA Effects:** GHG (CO₂, CH₄, N₂O, SF₆, and HFCs) emissions resulting from construction of
18 Alternative 1B are presented in Table 22-42. Emissions with are presented with implementation of
19 environmental commitments (see Appendix 3B, *Environmental Commitments*) and state mandates to
20 reduce GHG emissions. State mandates include the RPS, LCFS, and Pavley. These mandates do not
21 require additional action on the part of DWR, but will contribute to GHG emissions reductions. For
22 example, Pavley and LCFS will improve the fuel efficiency of vehicles and reduce the carbon content
23 of transportation fuels, respectively. Equipment used to construct the project will therefore be
24 cleaner and less GHG intensive than if the state mandates had not been established.

1 **Table 22-42. GHG Emissions from Construction of Alternative 1B (metric tons/year)^a**

Year	Equipment and Vehicles (CO ₂ e)	Electricity (CO ₂ e)	Concrete Batching (CO ₂)	Total CO ₂ e
2016	0	0	409	409
2017	0	0	0	0
2018	56,832	185	50,761	107,777
2019	175,639	1,033	7,973	184,645
2020	106,574	4,960	49,542	161,077
2021	118,358	13,206	98,263	229,827
2022	103,839	18,545	148,933	271,317
2023	135,968	16,508	145,408	297,885
2024	152,412	17,220	173,968	343,600
2025	71,433	11,616	116,167	199,217
2026	61,396	4,147	27,838	93,382
2027	61,806	792	40,147	102,745
2028	27,294	21	7,899	35,214
2029	0	1	0	1
<i>Total</i>	<i>1,071,552</i>	<i>88,234</i>	<i>867,307</i>	<i>2,027,094</i>

^a Emissions estimates do not account for GHG flux from land disturbance. Surface and subsurface (e.g., tunneling) activities may oxidize peat soils, releasing GHG emissions. However, recent geotechnical surveys indicated that peat is negligible below 80 feet of depth. The tunnel will be placed below this range and the design adjusted if peat soils are discovered. Peat material encountered during surface excavation for non-tunnel work will be covered with top soil to reduce oxidation when needed.

Values may not total correctly due to rounding.

2

3 Table 22-43 summarizes GHG emissions that would be generated in the BAAQMD, SMAQMD,
4 SJVAPCD, and YSAQMD. The table does not include emissions from electricity generation as these
5 emissions would be generated by power plants located throughout the state and the specific
6 location of electricity-generating facilities is unknown (see discussion preceding this impact
7 analysis). Due to the global nature of GHGs, the determination of effects is based on total emissions
8 generated by construction (Table 22-43). GHG emissions presented in Table 22-43 are therefore
9 provided for information purposes only.

10 **Table 22-43. Total GHG Emissions from Construction of Alternative 1B by Air District (metric**
11 **tons/year)**

Year	Equipment and Vehicles (CO ₂ e)	Concrete Batching (CO ₂) ^a	Total CO ₂ e ^b
SMAQMD	467,865	433,654	901,518
YSAQMD	58,320	0	58,320
SJVAPCD	398,330	433,654	831,983
BAAQMD	147,038	0	147,038

^a Emissions assigned to each air district based on the number of batching plants located in that air district.

^b Values may not total correctly due to rounding.

12

1 Construction of Alternative 1B would generate a total of 2.0 metric tons of GHG emissions after
 2 implementation of environmental commitments and state mandates (see Appendix 3B,
 3 *Environmental Commitments*). This is equivalent to adding 427,000 typical passenger vehicles to the
 4 road during construction (U.S. Environmental Protection Agency 2014e). As discussed in section
 5 22.3.2, *Determination of Effects*, any increase in emissions above net zero associated with
 6 construction of the BDCP water conveyance features would be adverse. Accordingly, this effect
 7 would be adverse. Mitigation Measure AQ-21, which would develop a GHG Mitigation Program to
 8 reduce construction-related GHG emissions to net zero, is available address this effect.

9 **CEQA Conclusion:** Construction of Alternative 1B would generate a total of 2.0 metric tons of GHG
 10 emissions. This is equivalent to adding 427,000 typical passenger vehicles to the road during
 11 construction (U.S. Environmental Protection Agency 2014e). As discussed in section 22.3.2,
 12 *Determination of Effects*, any increase in emissions above net zero associated with construction of
 13 the BDCP water conveyance features would be significant. Mitigation Measure AQ-21 would develop
 14 a GHG Mitigation Program to reduce construction-related GHG emissions to net zero. Accordingly,
 15 this impact would be less-than-significant with implementation of Mitigation Measure AQ-21.

16 **Mitigation Measure AQ-21: Develop and Implement a GHG Mitigation Program to Reduce**
 17 **Construction Related GHG Emissions to Net Zero (0)**

18 Please see Mitigation Measure AQ-21 under Impact AQ-21 in the discussion of Alternative 1A.

19 **Impact AQ-22: Generation of Cumulative Greenhouse Gas Emissions from Operation and**
 20 **Maintenance of the Proposed Water Conveyance Facility and Increased Pumping**

21 **NEPA Effects:** Operation of Alternative 1B would generate direct and indirect GHG emissions.
 22 Sources of direct emissions include heavy-duty equipment, on road crew trucks, and employee
 23 vehicle traffic. Indirect emissions would be generated predominantly by electricity consumption
 24 required for pumping as well as, maintenance, lighting, and other activities.

25 Table 22-44 summarizes long-term operational GHG emissions associated with operations,
 26 maintenance, and increased SWP pumping. Emissions were quantified for both ELT and LLT
 27 conditions, although activities would take place annually until project decommissioning. Emissions
 28 include state mandates to reduce GHG emissions (described in Impact AQ-21) are presented (there
 29 are no BDCP specific operational environmental commitments). Total CO₂e emissions are compared
 30 to both the No Action Alternative (NEPA point of comparison) and Existing Conditions (CEQA
 31 baseline). As discussed in Section 22.3.1.2, equipment emissions are assumed to be zero under both
 32 the No Action Alternative (NEPA point of comparison) and Existing Conditions (CEQA baseline). The
 33 equipment emissions presented in Table 22-44 are therefore representative of project impacts for
 34 both the NEPA and CEQA analysis.

1 **Table 22-44. GHG Emissions from Operation, Maintenance, and Increased SWP Pumping, Alternative**
 2 **1B (metric tons/year)**

Condition	Equipment CO ₂ e	SWP Electricity CO ₂ e		Total CO ₂ e	
		NEPA Point of Comparison	CEQA Baseline	NEPA Point of Comparison	CEQA Baseline
ELT	436	-	224,103	-	224,538
LLT	418	62,754	24,293	63,172	24,712

Note: The *NEPA point of comparison* compares total CO₂e emissions after implementation of Alternative 1B to the No Action Alternative, whereas the *CEQA baseline* compares total CO₂e emissions to Existing Conditions.

3

4 Table 22-45 summarizes equipment CO₂e emissions that would be generated in the BAAQMD,
 5 SMAQMD, and SJVAPCD (no emissions would be generated in the YSAQMD). The table does not
 6 include emissions from SWP pumping as these emissions would be generated by power plants
 7 located throughout the state (see discussion preceding this impact analysis). GHG emissions
 8 presented in Table 22-45 are therefore provided for information purposes only.

9 **SWP Operational and Maintenance GHG Emissions Analysis**

10 Alternative 1B would add approximately 1,583 GWh²⁸ of additional net electricity demand to
 11 operation of the SWP each year assuming 2060 conditions. Conditions at 2060 (LLT) are used for
 12 this analysis because they yield the largest potential additional net electricity requirements and
 13 therefore represent the largest potential impact. This 1,583 GWh is based on assumptions of future
 14 conditions and operations and includes all additional energy required to operate the project with
 15 BDCP Alternative 1B including any additional energy associated with additional water being moved
 16 through the system.

17 **Table 22-45. Equipment CO₂e Emissions from Operation and Maintenance of Alternative 1B by Air**
 18 **District (metric tons/year)^a**

Air District	ELT	LLT
SMAQMD	431	414
SJVAPCD	3	3
BAAQMD	2	2
Total	436	418

^a Emissions do not include emissions generated by increased SWP pumping.

19 In the CAP, DWR developed estimates of historical, current, and future GHG emissions. Figure 22-5
 20 shows those emissions as they were projected in the CAP and how those emissions projections
 21 would change with the additional electricity demands needed to operate the SWP with the addition
 22 of BDCP Alternative 1B. As shown in Figure 22-5, in 2024, the year BDCP Alternative 1B is projected
 23 to go online, DWR total emissions jump from around 912,000 metric tons of CO₂e to 1.6 million

²⁸ Estimated net energy demand differs slightly from what is presented in Chapter 21, *Energy*. This is because the above analysis includes energy needed for transmission and distribution of water along the Valley String, which is required to enable a comparison with the assumptions in DWR's CAP.

1 metric tons of CO₂e. This elevated level is approximately 340,000 metric tons of CO₂e above DWR's
2 designated GHG emissions reduction trajectory (red line, which is the linear interpolation between
3 DWR's 2020 GHG emissions goal and DWR's 2050 GHG emissions goal.) The projection indicates
4 that after the initial jump in emissions, existing GHG emissions reduction measures would bring the
5 elevated GHG emissions level back down below DWR's GHG emissions reduction trajectory by 2043
6 and that DWR would still achieve its GHG emission reduction goal by 2050.

7 Because employing only DWR's existing GHG emissions reduction measures would result in a large
8 initial increase in emissions and result in DWR emissions exceeding the emissions reduction
9 trajectory for several years, DWR will take additional actions to reduce GHG emissions if BDCP
10 Alternative 1B is implemented.

11 The CAP sets forth DWR's plan to manage its activities and operations to achieve its GHG emissions
12 reduction goals. The CAP commits DWR to monitoring its emissions each year and evaluating its
13 emissions every five years to determine whether it is on a trajectory to achieve its GHG emissions
14 reduction goals. If it appears that DWR will not meet the GHG emission reduction goals established
15 in the plan, DWR may make adjustments to existing emissions reduction measures, devise new
16 measures to ensure achievement of the goals, or take other action. Given the scale of additional
17 emissions that BDCP Alternative 1B would add to DWR's total GHG emissions, DWR has evaluated
18 the most likely method that it would use to compensate for such an increase in GHG emissions:
19 modification of DWR's REPP. The DWR REPP (GHG emissions reduction measure OP-1 in the CAP)
20 describes the amount of additional renewable energy that DWR expects to purchase each year to
21 meet its GHG emissions reduction goals. The REPP lays out a long-term strategy for renewable
22 energy purchases, though actual purchases of renewable energy may not exactly follow the schedule
23 in the REPP and will ultimately be governed by actual operations, measured emissions, and
24 contracting.

25 Table 22-46 below shows how the REPP could be modified to accommodate BDCP Alternative 1B,
26 and shows that additional renewable energy resources could be purchased during years 2022–2025
27 over what was programmed in the original REPP. The net result of this change is that by 2026
28 DWR's energy portfolio would contain nearly 1600 GWh of renewable energy (in addition to
29 hydropower generated at SWP facilities). This amount is nearly twice the amount called for in the
30 original DWR REPP (1,592 compared to 792). In later years, 2031–2050, DWR would bring on
31 slightly fewer additional renewable resources than programmed in the original REPP; however, over
32 10,000 additional GWh of electricity would be purchased under the modified REPP during the 40
33 year period 2011–2050 then under the original REPP. Figure 22-6 shows how this modified
34 Renewable Energy Procurement Plan would affect DWR's projected future emissions with BDCP
35 Alternative 1B.

1 **Table 22-46. Changes in Expected Renewable Energy Purchases 2011–2050 (Alternative 1B)**

Year(s)	Additional GWh of Renewable Power Purchased (Above previous year)	
	Original REPP	New REPP
2011–2020	36	36
2021	72	72
2022–2025	72	272
2026–2030	72	72
2031–2040	108	58
2041–2050	144	74
Total Cumulative	52,236	63,036

2
3 As shown in the analysis above and consistent with the analysis contained in the CAP and associated
4 Initial Study and Negative Declaration for the CAP, BDCP Alternative 1B would not adversely affect
5 DWR’s ability to achieve the GHG emissions reduction goals set forth in the CAP. Further, Alternative
6 1B would not conflict with any of DWR’s specific action GHG emissions reduction measures and
7 implements all applicable project level GHG emissions reduction measures as set forth in the CAP.
8 BDCP Alternative 1B is therefore consistent with the analysis performed in the CAP. There would be
9 no adverse effect.

10 **CEQA Conclusion:** SWP GHG emissions currently are below 1990 levels and achievement of the
11 goals of the CAP means that total DWR GHG emissions will be reduced to 50% of 1990 levels by
12 2020 and to 80% of 1990 levels by 2050. The implementation of BDCP Alternative 1B would not
13 affect DWR’s established emissions reduction goals or baseline (1990) emissions and therefore
14 would not result in a change in total DWR emissions that would be considered significant. Prior
15 adoption of the CAP by DWR already provides a commitment on the part of DWR to make all
16 necessary modifications to DWR’s REPP (as described above) or any other GHG emission reduction
17 measure in the CAP that are necessary to achieve DWR’s GHG emissions reduction goals. Therefore
18 no amendment to the approved CAP is necessary to ensure the occurrence of the additional GHG
19 emissions reduction activities needed to account for BDCP-related operational emissions. The effect
20 of BDCP Alternative 1B with respect to GHG emissions is less than cumulatively considerable and
21 therefore less than significant. No mitigation is required.

22 **Impact AQ-23: Generation of Cumulative Greenhouse Gas Emissions from Increased CVP**
23 **Pumping as a Result of Implementation of CM1**

24 **NEPA Effects:** As previously discussed, DWR’s CAP cannot be used to evaluate environmental
25 impacts associated with increased CVP pumping, as emissions associated with CVP are not under
26 DWR’s control and are not included in the CAP. Accordingly, GHG emissions resulting from increased
27 CVP energy use are evaluated separately from GHG emissions generated as a result of SWP energy
28 use.

29 Under Alternative 1B, operation of the CVP yields the generation of clean, GHG emissions-free,
30 hydroelectric energy. This electricity is sold into the California electricity market or directly to
31 energy users. Analysis of the No Action Alternative indicates that the CVP generates and will
32 continue to generate all of the electricity needed to operate the CVP system and approximately
33 3,500 GWh of excess hydroelectric energy that would be sold to energy users throughout California.
34 Implementation of Alternative 1B, however, would result in an increase of 167 GWh in the demand

1 for CVP generated electricity, which would result in a reduction of 167 GWh or electricity available
 2 for sale from the CVP to electricity users. This reduction in the supply of GHG emissions-free
 3 electricity to the California electricity users could result in a potential effect impact of the project, as
 4 these electricity users would have to acquire substitute electricity supplies that may result in GHG
 5 emissions (although additional conservation is also a possible outcome as well).

6 It is unknown what type of power source (e.g., renewable, natural gas) would be substituted for CVP
 7 electricity or if some of the lost power would be made up with higher efficiency. Given State
 8 mandates for renewable energy and incentives for energy efficiency, it is possible that a
 9 considerable amount of this power would be replaced by renewable resources or would cease to be
 10 needed as a result of higher efficiency. However, to ensure a conservative analysis, indirect
 11 emissions were quantified for the entire quantity of electricity (167 GWh) using the current and
 12 future statewide energy mix (adjusted to reflect RPS) (please refer to Appendix 22A, *Air Quality*
 13 *Analysis Methodology*, for additional detail on quantification methods).

14 Substitution of 167 GWh of electricity with a mix of sources similar to the current statewide mix
 15 would result in emissions of 46,714 metric tons of CO₂e; however, under expected future conditions
 16 (after full implementation of the RPS), emissions would be 36,300 metric tons of CO₂e.

17 Use of CVP hydroelectricity to meet increased electricity demand from operation of CVP facilities
 18 associated with Alternative 1B would reduce available CVP hydroelectricity to other California
 19 electricity users. Substitution of the lost electricity with electricity from other sources could
 20 indirectly result in an increase of GHG emissions that is comparable or larger than the level of GHG
 21 emissions that trigger mandatory GHG reporting for major facilities. As a result, these emissions
 22 could contribute to a cumulatively considerable effect and are therefore adverse. However, these
 23 emissions would be caused by dozens of independent electricity users, who had previously bought
 24 CVP power, making decisions about different ways to substitute for the lost power. These decisions
 25 are beyond the control of Reclamation or any of the other BDCP Lead Agencies. Further, monitoring
 26 to determine the actual indirect change in emissions as a result of BDCP actions would not be
 27 feasible. In light of the impossibility of predicting where any additional emissions would occur, as
 28 well as Reclamation's lack of regulatory authority over the purchasers of power in the open market,
 29 no workable mitigation is available or feasible.

30 **CEQA Conclusion:** Operation of the CVP is a federal activity beyond the control of any State agency
 31 such as DWR, and the power purchases by private entities or public utilities in the private
 32 marketplace necessitated by a reduction in available CVP-generated hydroelectric power are beyond
 33 the control of the State, just as they are beyond the control of Reclamation. For these reasons, there
 34 are no feasible mitigation measures that could reduce this potentially significant indirect impact,
 35 which is solely attributable to operations of the CVP and not the SWP, to a less than significant level.
 36 This impact is therefore determined to be significant and unavoidable.

37 **Impact AQ-24: Generation of Regional Criteria Pollutants from Implementation of CM2–CM11**

38 **NEPA Effects:** Table 22-29 summarizes potential construction and operational emissions that may
 39 be generated by implementation of CM2–CM11. See the discussion of Impact AQ-24 under
 40 Alternative 1A.

41 Criteria pollutants from restoration and enhancement actions could exceed applicable general
 42 conformity *de minimis* levels and applicable local thresholds. The effect would vary according to the
 43 equipment used in construction of a specific conservation measure, the location, the timing of the

1 actions called for in the conservation measure, and the air quality conditions at the time of
 2 implementation; these effects would be evaluated and identified in the subsequent project-level
 3 environmental analysis conducted for the CM2–CM11 restoration and enhancement actions. The
 4 effect of increases in emissions during implementation of CM2–CM11 in excess of applicable general
 5 conformity *de minimis* levels and air district regional thresholds (Table 22-8) could violate air basin
 6 SIPs and worsen existing air quality conditions. Mitigation Measure AQ-24 would be available to
 7 reduce this effect, but emissions would still be adverse.

8 **CEQA Conclusion:** Construction and operational emissions associated with the restoration and
 9 enhancement actions would result in a significant impact if the incremental difference, or increase,
 10 relative to Existing Conditions exceeds the applicable local air district thresholds shown in Table 22-
 11 8; these effects are expected to be further evaluated and identified in the subsequent project-level
 12 environmental analysis conducted for the CM2–CM11 restoration and enhancement actions.
 13 Mitigation Measure AQ-24 would be available to reduce this effect, but may not be sufficient to
 14 reduce emissions below applicable air quality management district thresholds (see Table 22-8).
 15 Consequently, this impact would be significant and unavoidable.

16 **Mitigation Measure AQ-24: Develop an Air Quality Mitigation Plan (AQMP) to Ensure Air**
 17 **District Regulations and Recommended Mitigation are Incorporated into Future**
 18 **Conservation Measures and Associated Project Activities**

19 Please see Mitigation Measure AQ-24 under Impact AQ-24 in the discussion of Alternative 1A.

20 **Impact AQ-25: Exposure of Sensitive Receptors to Health Hazards from Localized Particulate**
 21 **Matter, Carbon Monoxide, and Diesel Particulate Matter from Implementation of CM2–CM11**

22 **NEPA Effects:** The potential for Alternative 1B to expose sensitive receptors increased health
 23 hazards from localized PM, CO, and DPM would be similar to Alternative 1A. Activities shown in
 24 Table 22-29 with the greatest potential to have short or long-term air quality impacts are also
 25 anticipated to have the greatest potential to expose receptors to substantial pollutant
 26 concentrations. The effect would vary according to the equipment used, the location and timing of
 27 the actions called for in the conservation measure, the meteorological and air quality conditions at
 28 the time of implementation, and the location of receptors relative to the emission source. Potential
 29 health effects would be evaluated and identified in the subsequent project-level environmental
 30 analysis conducted for the CM2–CM11 restoration and enhancement actions.

31 The effect of increases in PM, CO, or DPM (cancer and non-cancer-risk) in excess of applicable air
 32 district thresholds (Table 22-8) at receptor locations could result in adverse health impacts.
 33 Mitigation Measures AQ-24 and AQ-25 would be available to reduce this effect.

34 **CEQA Conclusion:** Construction and operational emissions associated with the restoration and
 35 enhancement actions under Alternative 1B would result in a significant impact if PM, CO, or DPM
 36 (cancer and non-cancer-risk) concentrations at receptor locations exceed the applicable local air
 37 district thresholds shown in Table 22-8; these effects are expected to be further evaluated and
 38 identified in the subsequent project-level environmental analysis conducted for the CM2–CM11
 39 restoration and enhancement actions. Mitigation Measures AQ-24 and AQ-25 would ensure localized
 40 concentrations at receptor locations would be below applicable air quality management district
 41 thresholds (see Table 22-8). Consequently, this impact would be less than significant.

1 **Mitigation Measure AQ-24: Develop an Air Quality Mitigation Plan (AQMP) to Ensure Air**
 2 **District Regulations and Recommended Mitigation are Incorporated into Future**
 3 **Conservation Measures and Associated Project Activities**

4 Please see Mitigation Measure AQ-24 under Impact AQ-24 in the discussion of Alternative 1A.

5 **Mitigation Measure AQ-25: Prepare a Project-Level Health Risk Assessment to Reduce**
 6 **Potential Health Risks from Exposure to Localized DPM and PM Concentrations**

7 Please see Mitigation Measure AQ-25 under Impact AQ-25 in the discussion of Alternative 1A.

8 **Impact AQ-26: Creation of Potential Odors Affecting a Substantial Number of People from**
 9 **Implementation of CM2–CM11**

10 **NEPA Effects:** The potential for Alternative 1B to expose sensitive receptors increased odors would
 11 be similar to Alternative 1A. Accordingly, construction activities associated with CM2-CM11 are not
 12 anticipated to result in nuisance odors. Similarly, while restored land uses associated with the
 13 program have the potential to generate odors from natural processes, the emissions would be
 14 similar in origin and magnitude to the existing land use types in the restored area (e.g., managed
 15 wetlands). Moreover, specific odor effects would be evaluated and identified in the subsequent
 16 project-level environmental analysis conducted for the CM2–CM11 restoration and enhancement
 17 actions. Accordingly, odor-related effects associated with CM2–CM11 would not be adverse.

18 **CEQA Conclusion:** Alternative 1B would not result in the addition of major odor producing facilities.
 19 Diesel emissions during construction could generate temporary odors, but these would quickly
 20 dissipate and cease once construction is completed. Increases in wetland, tidal, and upland habitats
 21 may increase the potential for odors from natural processes. However, the origin and magnitude of
 22 odors would be similar to the existing land use types in the restored area (e.g., managed wetlands).
 23 Moreover, specific odor impacts would be evaluated and identified in the subsequent project-level
 24 environmental analysis conducted for the CM2–CM11 restoration and enhancement actions.
 25 Accordingly, the impact of exposure of sensitive receptors to potential odors would be less than
 26 significant. No mitigation is required.

27 **Impact AQ-27: Generation of Cumulative Greenhouse Gas Emissions from Implementation of**
 28 **CM2–CM11**

29 **NEPA Effects:** CM2–CM11CM2–CM11 implemented under Alternative 1B would result in local GHG
 30 emissions from construction equipment and vehicle exhaust, similar to Alternative 1A. Restoration
 31 activities with the greatest potential for emissions include those that break ground and require use
 32 of earthmoving equipment. The type of restoration action and related construction equipment use
 33 are shown in Table 22-29. Implementing CM2–CM11 would also affect long-term sequestration rates
 34 through land use changes, such as conversion of agricultural land to wetlands, inundation of peat
 35 soils, drainage of peat soils, and removal or planting of carbon-sequestering plants.

36 Without additional information on site-specific characteristics associated with each of the
 37 restoration components, a complete assessment of GHG flux from CM2–CM11 is currently not
 38 possible. The effect of carbon sequestration and CH₄ generation would vary by land use type, season,
 39 and chemical and biological characteristics; these effects would be evaluated and identified in the
 40 subsequent project-level environmental analysis conducted for the CM2–CM11 restoration and
 41 enhancement actions. Mitigation Measures AQ-24 and AQ-27 would be available to reduce this

1 effect. However, due to the potential for increases in GHG emissions from construction and land use
2 change, this effect would be adverse.

3 **CEQA Conclusion:** The restoration and enhancement actions under Alternative 1B could result in a
4 significant impact if activities are inconsistent with applicable GHG reduction plans, do not
5 contribute to a lower carbon future, or generate excessive emissions, relative to other projects
6 throughout the state. These effects are expected to be further evaluated and identified in the
7 subsequent project-level environmental analysis conducted for the CM2–CM11 restoration and
8 enhancement actions. Mitigation Measures AQ-24 and AQ-27 would be available to reduce this
9 impact, but may not be sufficient to reduce to a less-than-significant level. Consequently, this impact
10 would be significant and unavoidable.

11 **Mitigation Measure AQ-24: Develop an Air Quality Mitigation Plan (AQMP) to Ensure Air**
12 **District Regulations and Recommended Mitigation are Incorporated into Future**
13 **Conservation Measures and Associated Project Activities**

14 Please see Mitigation Measure AQ-24 under Impact AQ-24 in the discussion of Alternative 1A.

15 **Mitigation Measure AQ-27: Prepare a Land Use Sequestration Analysis to Quantify and**
16 **Mitigate (as Needed) GHG Flux Associated with Conservation Measures and Associated**
17 **Project Activities**

18 Please see Mitigation Measure AQ-27 under Impact AQ-27 in the discussion of Alternative 1A.

19 **22.3.3.4 Alternative 1C—Dual Conveyance with West Alignment and**
20 **Intakes W1–W5 (15,000 cfs; Operational Scenario A)**

21 A total of five intakes would be constructed under Alternative 1C. They would be sited on the west
22 bank of the Sacramento River, opposite the locations identified for the pipeline/tunnel and east
23 alignments. Under this alternative, water would be carried south in a canal along the western side of
24 the Delta to an intermediate pumping plant and then pumped through a tunnel to a continuing canal
25 to the proposed Byron Tract Forebay immediately northwest of Clifton Court Forebay (Figures 3-6
26 and 3-7 in Chapter 3, *Description of Alternatives*).

27 Construction and operation of Alternative 1C would require the use of electricity, which would be
28 supplied by the California electrical grid. Power plants located throughout the state supply the grid
29 with power, which will be distributed to the Study area to meet project demand. Power supplied by
30 statewide power plants will generate criteria pollutants. Because these power plants are located
31 throughout the state, criteria pollutant emissions associated with Alternative 1C electricity demand
32 cannot be ascribed to a specific air basin or air district within the Study area. Criteria pollutant
33 emissions from electricity consumption, which are summarized in Table 22-47, are therefore
34 provided for informational purposes only and are not included in the impact conclusion.

1 **Table 22-47. Criteria Pollutant Emissions from Electricity Consumption: Construction and Net Project**
 2 **Operations, Alternative 1C (tons/year)^{a,b}**

Year	Analysis	ROG	CO	NO _x	PM10	PM2.5 ^c	SO ₂
2016	-	0	0	0	0	0	0
2017	-	0	0	0	0	0	0
2018	-	<1	<1	<1	<1	<1	<1
2019	-	<1	1	<1	<1	<1	1
2020	-	<1	7	1	1	1	3
2021	-	<1	19	1	2	2	8
2022	-	<1	26	2	2	2	11
2023	-	<1	23	2	2	2	10
2024	-	<1	24	2	2	2	10
2025	-	<1	16	1	1	1	7
2026	-	<1	6	<1	<1	<1	2
2027	-	<1	1	<1	<1	<1	<1
2028	-	<1	<1	<1	<1	<1	<1
2029	-	<1	<1	<1	<1	<1	<1
ELT	CEQA	2	17	232	20	20	98
LLT	NEPA	2	21	286	24	24	121
LLT	CEQA	1	9	120	10	10	51

NEPA = Compares criteria pollutant emissions after implementation of Alternative 1C to the No Action Alternative.

CEQA = Compares criteria pollutant emissions after implementation of Alternative 1C to Existing Conditions.

^a Emissions assume implementation of RPS (see Appendix 22A, *Air Quality Analysis Methodology*). Power plants that generate electricity for the proposed project would be subject to local air district permitting requirements, including standards to implement BACT to reduce criteria pollutant emissions.

^b Because GHG emissions are cumulative (see Section 22.3.2.1) and not evaluated at the local air basin or air district level, they are discussed in Impacts AQ-21 and AQ-22. The GHG analysis for SWP power utilizes actual and forecasted GHG emissions rates for the SWP system, which differs slightly from the above analysis. Statewide grid average emission factors were utilized for the above analysis as criteria pollutant emission factors for SWP were unavailable. Please also note that the above analysis does not account for additional renewable energy that will be procured through modifications to DWR's REPP (see Impact AQ-22). Accordingly, the emissions results presented above represent a conservative assessment of potential criteria pollutant emissions.

^c Emission factors for PM2.5 are currently unavailable. Consequently, PM2.5 emissions were assumed to equal PM10 emissions. Because PM2.5 represents a fraction of PM10, this approach represents a conservative assessment of PM2.5 emissions from electricity consumption.

3

4 Construction activities would generate emissions of ozone precursors (ROG and NO_x), CO, PM10,
 5 PM2.5, and SO₂. Table 22-48 summarizes criteria pollutant emissions that would be generated in the
 6 BAAQMD, SMAQMD, and YSAQMD in pounds per day and tons per year (no construction emissions
 7 would be generated in the SJVAPCD). Emissions estimates include implementation of environmental
 8 commitments (see Appendix 3B, *Environmental Commitments*). Although emissions are presented in
 9 different units (pounds and tons), the amounts of emissions are identical (i.e., 2,000 pounds is
 10 identical to 1 ton). Summarizing emissions in both pounds per day and tons per year is necessary to
 11 evaluate project-level effects against the appropriate air district thresholds, which are given in both
 12 pounds and tons (see Table 22-8).

13 As shown in Appendix 22B, *Air Quality Assumptions*, construction activities during several phases
 14 will likely occur concurrently. To ensure a conservative analysis, the maximum daily emissions

1 during these periods of overlap were estimated assuming all equipment would operate at the same
2 time—this gives the maximum total project-related air quality impact during construction.
3 Accordingly, the daily emissions estimates represent a conservative assessment of construction
4 impacts. Exceedances of the air district thresholds are shown in underlined text.

5 Operation and maintenance activities under Alternative 1C would result in emissions of ROG, NO_x,
6 CO, PM10, PM2.5, and SO₂. Emissions were quantified for both ELT and LLT conditions, although
7 activities would take place annually until project decommissioning. Future emissions, in general, are
8 anticipated to lessen because of continuing improvements in vehicle and equipment engine
9 technology.

10 Table 22-49 summarizes criteria pollutant emissions associated with operation of Alternative 1C in
11 the BAAQMD, SMAQMD, and YSAQMD in pounds per day and tons per year (no operational
12 emissions would be generated in the SJVAPCD). Although emissions are presented in different units
13 (pounds and tons), the amounts of emissions are identical (i.e., 2,000 pounds is identical to 1 ton).
14 Summarizing emissions in both pounds per day and tons per year is necessary to evaluate project-
15 level effects against the appropriate air district thresholds, which are given in both pounds and tons
16 (see Table 22-8).
17

1 **Table 22-48. Criteria Pollutant Emissions from Construction of Alternative 1C (pounds/day and tons/year)**

Year	Maximum Daily Emissions (pounds/day)										Annual Emissions (tons/year)									
	Bay Area Air Quality Management District										Bay Area Air Quality Management District									
	ROG	NO _x	CO	PM10			PM2.5			SO ₂	ROG	NO _x	CO	PM10			PM2.5			SO ₂
			Exhaust	Dust	Total	Exhaust	Dust	Total				Exhaust	Dust	Total	Exhaust	Dust	Total			
2016	0	0	0	0	57	57	0	9	9	0	0	0	0	5	5	0	1	1	0	
2017	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
2018	<u>297</u>	<u>2,468</u>	2,135	36	1,222	1,258	35	196	230	11	8	60	62	1	43	44	1	6	7	<1
2019	<u>449</u>	<u>3,619</u>	2,973	46	1,433	1,478	44	230	274	15	27	212	182	3	81	85	3	13	16	1
2020	<u>182</u>	<u>1,651</u>	1,144	25	489	514	24	89	113	6	21	175	128	3	44	46	3	7	10	1
2021	<u>210</u>	<u>1,856</u>	1,286	28	612	640	27	108	135	8	25	207	157	3	54	57	3	9	12	1
2022	<u>211</u>	<u>1,799</u>	1,289	26	685	700	25	140	155	9	20	152	129	2	43	46	2	7	10	1
2023	<u>221</u>	<u>1,854</u>	1,553	19	806	822	19	164	180	13	20	144	143	2	51	53	2	9	10	1
2024	<u>269</u>	<u>2,180</u>	1,732	19	829	848	18	162	180	13	23	157	150	2	53	55	2	9	11	1
2025	<u>118</u>	<u>969</u>	731	8	445	453	7	93	100	8	10	66	64	1	27	28	1	5	5	1
2026	<u>76</u>	<u>669</u>	496	5	366	371	5	76	82	6	7	48	43	1	21	22	<1	4	4	<1
2027	<u>60</u>	<u>554</u>	372	6	344	351	6	72	78	6	3	27	22	<1	18	18	<1	3	4	<1
2028	16	<u>233</u>	102	1	259	260	1	55	56	3	<1	3	1	<1	7	7	<1	1	1	<1
2029	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<i>Thresholds</i>	<i>54</i>	<i>54</i>	-	<i>82</i>	<i>BMPs</i>	-	<i>54</i>	<i>BMPs</i>	-	-	-	-	-	-	-	-	-	-	-	-
Year	Sacramento Metropolitan Air Quality Management District										Sacramento Metropolitan Air Quality Management District									
	ROG	NO _x	CO	PM10			PM2.5			SO ₂	ROG	NO _x	CO	PM10			PM2.5			SO ₂
				Exhaust	Dust	Total	Exhaust	Dust	Total				Exhaust	Dust	Total	Exhaust	Dust	Total		
2016	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2017	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2018	11	<u>153</u>	69	1	51	52	1	11	12	1	<1	1	2	<1	1	1	<1	<1	<1	<1
2019	35	<u>383</u>	244	3	104	107	3	19	22	2	3	21	21	<1	5	6	<1	1	1	<1
2020	57	<u>562</u>	390	6	138	144	5	23	28	2	6	41	39	<1	10	11	<1	1	2	<1
2021	72	<u>684</u>	500	8	213	221	7	31	39	3	8	61	60	1	15	16	1	2	3	<1
2022	63	<u>556</u>	476	5	130	135	5	23	28	2	8	55	63	1	11	11	1	1	2	<1
2023	57	<u>469</u>	427	4	108	112	4	20	24	2	7	47	57	1	7	8	<1	1	1	<1
2024	54	<u>421</u>	401	4	88	91	3	18	21	2	7	39	50	<1	5	5	<1	1	1	<1
2025	44	<u>346</u>	309	3	76	79	3	16	18	2	4	26	32	<1	4	4	<1	<1	1	<1
2026	33	<u>286</u>	228	2	70	72	2	15	17	2	2	14	16	<1	2	2	<1	<1	<1	<1
2027	13	<u>167</u>	94	1	60	61	1	14	15	1	1	4	5	<1	1	1	<1	<1	<1	<1
2028	4	83	25	<1	34	34	<1	9	9	1	<1	1	<1	<1	<1	<1	<1	<1	<1	<1
2029	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<i>Thresholds</i>	-	<i>85</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Year	Yolo Solano Air Quality Management District										Yolo Solano Air Quality Management District									
	ROG	NO _x	CO	PM10			PM2.5			SO ₂	ROG	NO _x	CO	PM10			PM2.5			SO ₂
				Exhaust	Dust	Total	Exhaust	Dust	Total					Exhaust	Dust	Total	Exhaust	Dust	Total	
2016	0	0	0	0	29	29	0	4	4	0	0	0	0	0	2	2	0	<1	<1	0
2017	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2018	167	1,249	1,206	21	640	<u>662</u>	21	90	111	5	7	<u>56</u>	51	1	32	33	1	4	6	<1
2019	337	2,769	2,111	45	798	<u>830</u>	43	115	155	9	<u>24</u>	<u>196</u>	160	4	64	68	3	10	13	1
2020	239	2,039	1,471	37	489	<u>526</u>	35	79	114	6	<u>28</u>	<u>230</u>	166	4	53	58	4	9	13	1
2021	289	2,405	1,698	40	681	<u>722</u>	38	108	147	8	<u>32</u>	<u>254</u>	184	5	68	72	4	10	15	1
2022	341	2,950	2,105	44	845	<u>889</u>	42	132	174	14	<u>27</u>	<u>219</u>	167	3	81	85	3	12	15	1
2023	396	3,259	2,654	42	1,074	<u>1,111</u>	41	162	197	28	<u>36</u>	<u>280</u>	248	3	104	107	3	14	18	2
2024	417	3,500	2,751	44	1,222	<u>1,265</u>	42	179	221	25	<u>41</u>	<u>314</u>	274	4	125	129	4	18	21	2
2025	372	3,620	2,594	40	1,428	<u>1,467</u>	38	199	237	25	<u>22</u>	<u>162</u>	148	2	79	81	2	11	13	1
2026	212	1,495	1,225	17	608	<u>624</u>	16	102	118	17	<u>18</u>	<u>123</u>	120	2	66	68	2	10	12	1
2027	230	1,780	1,448	42	656	<u>698</u>	41	107	148	26	<u>19</u>	<u>139</u>	123	3	77	80	3	11	14	1
2028	139	992	737	9	471	<u>479</u>	9	75	83	5	7	<u>53</u>	39	<1	29	29	<1	5	5	<1
2029	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<i>Thresholds</i>	-	-	-	-	-	<i>80</i>	-	-	-	-	<i>10</i>	<i>10</i>	-	-	-	-	-	-	-	-

1

1 **Table 22-49. Criteria Pollutant Emissions from Operation of Alternative 1C (pounds per day and tons**
 2 **per year)**

Condition	Maximum Daily Emissions (pounds/day)						Annual Emissions (tons/year)					
	Bay Area Air Quality Management District						Bay Area Air Quality Management District					
	ROG	NO _x	CO	PM10	PM2.5	SO ₂	ROG	NO _x	CO	PM10	PM2.5	SO ₂
ELT	3	19	32	6	2	<1	0.02	0.15	0.24	0.04	0.01	<0.01
LLT	3	16	31	6	1	<1	0.02	0.13	0.23	0.04	0.01	<0.01
Thresholds	54	54	-	82	82	-	-	-	-	-	-	-
Condition	Sacramento Metropolitan Air Quality Management District						Sacramento Metropolitan Air Quality Management District					
	ROG	NO _x	CO	PM10	PM2.5	SO ₂	ROG	NO _x	CO	PM10	PM2.5	SO ₂
ELT	3	19	32	6	2	<1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
LLT	3	16	31	6	1	<1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Thresholds	65	65	-	-	-	-	-	-	-	-	-	-
Condition	Yolo Solano Air Quality Management District						Yolo Solano Air Quality Management District					
	ROG	NO _x	CO	PM10	PM2.5	SO ₂	ROG	NO _x	CO	PM10	PM2.5	SO ₂
ELT	4	27	51	9	3	<1	0.20	1.21	2.55	0.42	0.12	0.01
LLT	4	23	48	8	2	<1	0.17	1.03	2.43	0.40	0.11	0.01
Thresholds	-	-	-	80	-	-	10	10	-	-	-	-

3

4 **Impact AQ-1: Generation of Criteria Pollutants in Excess of the SMAQMD Regional Thresholds**
 5 **during Construction of the Proposed Water Conveyance Facility**

6 **NEPA Effects:** As shown in Table 22-48, construction emissions would exceed SMAQMD's daily NO_x
 7 threshold for all years between 2018 and 2027, even with implementation of environmental
 8 commitments (see Appendix 3B, *Environmental Commitments*). All other pollutants would be below
 9 air district thresholds and therefore would not result in an adverse regional air quality effect. Since
 10 NO_x is a precursor to ozone and PM, exceedances of SMAQMD's daily NO_x threshold could impact
 11 both regional ozone and PM formation, which could worsen regional air quality and air basin
 12 attainment of the NAAQS and CAAQS.

13 While equipment could operate at any work area identified for this alternative, the highest level of
 14 NO_x emissions in the SMAQMD is expected to occur at those sites where the duration and intensity
 15 of construction activities would be greatest. This includes all intake and intake pumping plant sites
 16 along the west bank of the Sacramento River, as well as the intermediate pumping plant site on Ryer
 17 Island.

18 Environmental commitments will reduce construction-related emissions; however, as shown in
 19 Table 22-48, NO_x emissions would still exceed SMAQMD's threshold identified in Table 22-8 and
 20 would result in an adverse effect to air quality. Mitigation Measures AQ-1a and AQ-1b would be
 21 available to reduce NO_x, and would thus address regional effects related to secondary ozone and PM
 22 formation.

23 **CEQA Conclusion:** NO_x emissions generated during construction would exceed SMAQMD's threshold
 24 identified in Table 22-8. Since NO_x is a precursor to ozone and PM, exceedances of SMAQMD's daily
 25 NO_x threshold could impact both regional ozone and PM formation.

1 SMAQMD's regional emissions thresholds (Table 22-8) have been adopted to ensure projects do not
 2 hinder attainment of the CAAQS or NAAQS. The impact of generating NO_x emissions in excess of
 3 local air district thresholds would therefore violate applicable air quality standards in the Study area
 4 and could contribute to or worsen an existing air quality conditions. This impact would therefore be
 5 significant. This would be a significant impact. Mitigation Measures AQ-1a and AQ-1b would be
 6 available to reduce NO_x emissions to a less-than-significant level by offsetting emissions to
 7 quantities below SMAQMD CEQA thresholds (see Table 22-8).

8 **Mitigation Measure AQ-1a: Mitigate and Offset Construction-Generated Criteria Pollutant**
 9 **Emissions within the SFNA to Net Zero (0) for Emissions in Excess of General Conformity**
 10 ***De Minimis* Thresholds (Where Applicable) and to Quantities below Applicable CEQA**
 11 **Thresholds for Other Pollutants**

12 Please see Mitigation Measure AQ-1a under Impact AQ-1 in the discussion of Alternative 1A.

13 **Mitigation Measure AQ-1b: Develop an Alternative or Complementary Offsite Mitigation**
 14 **Program to Mitigate and Offset Construction-Generated Criteria Pollutant Emissions**
 15 **within the SFNA to Net Zero (0) for Emissions in Excess of General Conformity *De Minimis***
 16 **Thresholds (Where Applicable) and to Quantities below Applicable CEQA Thresholds for**
 17 **Other Pollutants**

18 Please see Mitigation Measure AQ-1b under Impact AQ-1 in the discussion of Alternative 1A.

19 **Impact AQ-2: Generation of Criteria Pollutants in Excess of the YSAQMD Regional Thresholds**
 20 **during Construction of the Proposed Water Conveyance Facility**

21 ***NEPA Effects:*** As shown in Table 22-48, construction emissions would exceed YSAQMD regional
 22 thresholds for the following pollutants and years, even with implementation of environmental
 23 commitments (see Appendix 3B, *Environmental Commitments*). All other pollutants would be below
 24 air district thresholds and therefore would not result in an adverse air quality effect.

- 25 ● ROG: 2019–2027
- 26 ● NO_x: 2018–2028
- 27 ● PM10: 2018–2028

28 Since ROG and NO_x are precursors to ozone and NO_x is a precursor to PM, exceedances of YSAQMD's
 29 ROG and NO_x thresholds could impact both regional ozone and PM formation, which could worsen
 30 regional air quality and air basin attainment of the NAAQS and CAAQS. Similarly, exceedances of
 31 YSAQMD's PM10 threshold could impede attainment of the NAAQS and CAAQS for PM10.

32 Environmental commitments outlined in Appendix 3B, *Environmental Commitments*, will reduce
 33 construction-related emissions; however, as shown in Table 22-48, ROG, NO_x, and PM10 emissions
 34 would still exceed the applicable YSAQMD thresholds identified in Table 22-8 and result in an
 35 adverse regional effect to air quality. Mitigation Measures AQ-1a and AQ-1b are available to reduce
 36 ROG, NO_x, and PM10 emissions, and would thus address regional effects related to secondary ozone
 37 and PM formation.

38 ***CEQA Conclusion:*** Emissions of ROG, NO_x, and PM10 generated during construction would exceed
 39 YSAQMD's regional thresholds identified in Table 22-8. Since ROG and NO_x are precursors to ozone
 40 and NO_x is a precursor to PM, exceedances of YSAQMD's ROG and NO_x threshold could impact both

1 regional ozone and PM formation, which could worsen regional air quality and air basin attainment
 2 of the NAAQS and CAAQS. Similarly, exceedances of YSAQMD's PM10 threshold could impede
 3 attainment of the NAAQS and CAAQS for PM10. YSAQMD's regional emissions thresholds (Table 22-
 4 8) have been adopted to ensure projects do not hinder attainment of the CAAQS or NAAQS. The
 5 impact of generating ROG, NO_x, and PM10 in excess of local air district regional thresholds would
 6 therefore violate applicable air quality standards in the study area and could contribute to or
 7 worsen an existing air quality conditions. This would be a significant impact. Mitigation Measures
 8 AQ-1a and AQ-1b would be available to reduce ROG, NO_x, and PM10 emissions to a less-than-
 9 significant level by offsetting emissions to quantities below YSAQMD CEQA thresholds (see Table
 10 22-8).

11 **Mitigation Measure AQ-1a: Mitigate and Offset Construction-Generated Criteria Pollutant**
 12 **Emissions within the SFNA to Net Zero (0) for Emissions in Excess of General Conformity**
 13 ***De Minimis* Thresholds (Where Applicable) and to Quantities below Applicable CEQA**
 14 **Thresholds for Other Pollutants**

15 Please see Mitigation Measure AQ-1a under Impact AQ-1 in the discussion of Alternative 1A.

16 **Mitigation Measure AQ-1b: Develop an Alternative or Complementary Offsite Mitigation**
 17 **Program to Mitigate and Offset Construction-Generated Criteria Pollutant Emissions**
 18 **within the SFNA to Net Zero (0) for Emissions in Excess of General Conformity *De Minimis***
 19 **Thresholds (Where Applicable) and to Quantities below Applicable CEQA Thresholds for**
 20 **Other Pollutants**

21 Please see Mitigation Measure AQ-1b under Impact AQ-1 in the discussion of Alternative 1A.

22 **Impact AQ-3: Generation of Criteria Pollutants in Excess of the BAAQMD Regional Thresholds**
 23 **during Construction of the Proposed Water Conveyance Facility**

24 ***NEPA Effects:*** As shown in Table 22-48, construction emissions would exceed BAAQMD's daily
 25 thresholds for the following years and pollutants, even with implementation of environmental
 26 commitments. All other pollutants would be below air district thresholds and therefore would not
 27 result in an adverse air quality effect.

- 28 ● ROG: 2018–2027
- 29 ● NO_x: 2018–2028

30 Since ROG and NO_x are precursors to ozone and NO_x is a precursor to PM, exceedances of BAAQMD's
 31 ROG and NO_x thresholds could impact both regional ozone and PM formation, which could worsen
 32 regional air quality and air basin attainment of the NAAQS and CAAQS.

33 While equipment could operate at any work area identified for this alternative, the highest level of
 34 ROG and NO_x emissions in the BAAQMD are expected to occur at those sites where the duration and
 35 intensity of construction activities would be greatest, including the site of the Byron Tract Forebay
 36 adjacent to and northwest of Clifton Court Forebay.

37 Environmental commitments outlined in Appendix 3B, *Environmental Commitments*, will reduce
 38 construction-related emissions; however, as shown in Table 22-48, ROG and NO_x emissions would
 39 still exceed BAAQMD's thresholds identified in Table 22-8 and would result in an adverse effect to
 40 air quality. Although Mitigation Measures AQ-3a and AQ-3b would be available to reduce ROG and

1 NO_x, given the magnitude of estimated emissions, neither measure would reduce emissions below
2 district thresholds.²⁹ Accordingly, this effect would be adverse.

3 **CEQA Conclusion:** Emissions of ROG and NO_x precursors generated during construction would
4 exceed BAAQMD thresholds identified in Table 22-8. Since ROG and NO_x are precursors to ozone
5 and NO_x is a precursor to PM, exceedances of BAAQMD's ROG and NO_x thresholds could impact both
6 regional ozone and PM formation. The BAAQMD's regional emissions thresholds (Table 22-8) have
7 been adopted to ensure projects do not hinder attainment of the CAAQS or NAAQS. The impact of
8 generating ROG and NO_x emissions in excess of local air district regional thresholds would therefore
9 violate applicable air quality standards in the Study area and could contribute to or worsen an
10 existing air quality conditions. Although Mitigation Measures AQ-3a and AQ-3b would be available
11 to reduce ROG and NO_x, given the magnitude of estimated emissions, neither measure would reduce
12 emissions below district thresholds. Accordingly, this effect would be significant and unavoidable.

13 **Mitigation Measure AQ-3a: Mitigate and Offset Construction-Generated Criteria Pollutant**
14 **Emissions within BAAQMD/SFBAAB to Net Zero (0) for Emissions in Excess of General**
15 **Conformity *De Minimis* Thresholds (Where Applicable) and to Quantities below**
16 **Applicable BAAQMD CEQA Thresholds for Other Pollutants**

17 Please see Mitigation Measure AQ-3a under Impact AQ-3 in the discussion of Alternative 1A.

18 **Mitigation Measure AQ-3b: Develop an Alternative or Complementary Offsite Mitigation**
19 **Program to Mitigate and Offset Construction-Generated Criteria Pollutant Emissions**
20 **within the BAAQMD/SFBAAB to Net Zero (0) for Emissions in Excess of General**
21 **Conformity *De Minimis* Thresholds (Where Applicable) and to Quantities below**
22 **Applicable BAAQMD CEQA Thresholds for Other Pollutants**

23 Please see Mitigation Measure AQ-3b under Impact AQ-3 in the discussion of Alternative 1A.

24 **Impact AQ-4: Generation of Criteria Pollutants in Excess of the SJVAPCD Regional Thresholds**
25 **during Construction of the Proposed Water Conveyance Facility**

26 **NEPA Effects:** Construction of Alternative 1C would occur in the SMAQMD, YSAQMD, and BAAQMD.
27 No construction emissions would be generated in the SJVAPCD. Consequently, construction of
28 Alternative 1C would neither exceed the SJVAPCD regional thresholds of significance nor result in an
29 adverse effect on air quality.

30 **CEQA Conclusion:** Construction emissions generated by the alternative would not exceed SJVAPCD's
31 regional thresholds of significance. This impact would be less than significant. No mitigation is
32 required.

²⁹ The amount of moneys required to achieve sufficient contracts to reduce project emissions below air district thresholds would require immediate and substantial outreach, staffing, and other resources. There are also a number of hurdles related to accelerating equipment turnover and identifying available projects. While the mitigation measure will reduce project emissions, it is unlikely sufficient resources can be identified to reduce emissions by the amount required to achieve a less-than-significant finding.

1 **Impact AQ-5: Generation of Criteria Pollutants in Excess of the SMAQMD Regional Thresholds**
 2 **from Operation and Maintenance of the Proposed Water Conveyance Facility**

3 **NEPA Effects:** Operations and maintenance in SMAQMD could include annual inspections (see
 4 Appendix 22A, *Air Quality Analysis Methodology*, for additional detail). The highest concentration of
 5 operational emissions in the SMAQMD would occur at routine inspection sites along the west canal
 6 alignment. As shown in Table 22-49, operation and maintenance activities under Alternative 1C
 7 would not exceed SMAQMD's regional thresholds of significance and there would be no adverse
 8 effect (see Table 22-8). Accordingly, project operations would not contribute to or worsen existing
 9 air quality exceedances. There would be no adverse effect.

10 **CEQA Conclusion:** Emissions generated during operation and maintenance activities would not
 11 exceed SMAQMD regional thresholds for criteria pollutants. SMAQMD's regional emissions
 12 thresholds (Table 22-8) have been adopted to ensure projects do not hinder attainment of the
 13 CAAQS. The impact of generating emissions in excess of local air district would therefore violate
 14 applicable air quality standards in the Study area and could contribute to or worsen an existing air
 15 quality conditions. Because project operations would not exceed SMAQMD regional thresholds, the
 16 impact would be less than significant. No mitigation is required.

17 **Impact AQ-6: Generation of Criteria Pollutants in Excess of the YSAQMD Regional Thresholds**
 18 **from Operation and Maintenance of the Proposed Water Conveyance Facility**

19 **NEPA Effects:** Operations and maintenance in YSAQMD could include both routine activities and
 20 yearly maintenance. Daily activities at all pumping plants and intakes are covered by maintenance,
 21 management, repair, and operating crews. Yearly maintenance would include annual inspections, as
 22 well as tunnel dewatering and sediment removal (see Appendix 22A, *Air Quality Analysis*
 23 *Methodology*, for additional detail). The highest concentration of operational emissions in the
 24 YSAQMD is expected at intake and intake pumping plant sites along the west bank of the Sacramento
 25 River, as well as at the intermediate pumping plant site on Ryer Island. As shown in Table 22-49,
 26 operation and maintenance activities under Alternative 1C would not exceed YSAQMD's regional
 27 thresholds of significance and there would be no adverse effect (see Table 22-8). Accordingly,
 28 project operations would not contribute to or worsen existing air quality exceedances. There would
 29 be no adverse effect.

30 **CEQA Conclusion:** Emissions generated during operation and maintenance activities would not
 31 exceed YSAQMD regional thresholds for criteria pollutants. YSAQMD's regional emissions thresholds
 32 (Table 22-8) have been adopted to ensure projects do not hinder attainment of the CAAQS. Projects
 33 that do not violate YSAQMD regional thresholds will therefore not conflict with local, state, and
 34 federal efforts to improve regional air quality in the SFNA. The impact would be less than significant.
 35 No mitigation is required.

36 **Impact AQ-7: Generation of Criteria Pollutants in Excess of the BAAQMD Regional Thresholds**
 37 **from Operation and Maintenance of the Proposed Water Conveyance Facility**

38 **NEPA Effects:** Operations and maintenance in BAAQMD could include annual inspections, as well as
 39 tunnel dewatering and sediment removal (see Appendix 22A, *Air Quality Analysis Methodology*, for
 40 additional detail). The highest concentration of operational emissions in the BAAQMD are expected
 41 at the Byron Tract Forebay (including control gates), which is adjacent to and northwest of Clifton
 42 Court Forebay. As shown in Table 22-49, operation and maintenance activities under Alternative 1C
 43 would not exceed BAAQMD's regional thresholds of significance (see Table 22-8). Thus, project

1 operations would not contribute to or worsen existing air quality exceedances. There would be no
2 adverse effect.

3 **CEQA Conclusion:** Emissions generated during operation and maintenance activities would not
4 exceed BAAQMD regional thresholds for criteria pollutants. BAAQMD's regional emissions
5 thresholds (Table 22-8) have been adopted to ensure projects do not hinder attainment of the
6 CAAQS. The impact of generating emissions in excess of local air district thresholds would violate
7 applicable air quality standards in the Study area and could contribute to or worsen an existing air
8 quality conditions. Because project operations would not exceed BAAQMD regional thresholds, the
9 impact would be less than significant. No mitigation is required.

10 **Impact AQ-8: Generation of Criteria Pollutants in Excess of the SJVAPCD Regional Thresholds**
11 **from Operation and Maintenance of the Proposed Water Conveyance Facility**

12 **NEPA Effects:** Alternative 1C would not construct any permanent features in the SJVAPCD that
13 would require routine operations and maintenance. No operational emissions would be generated
14 in the SJVAPCD. Consequently, operation of Alternative 1C would neither exceed the SJVAPCD
15 thresholds of significance nor result in an adverse effect to air quality.

16 **CEQA Conclusion:** Alternative 1C would not construct any permanent features in the SJVAPCD that
17 would require routine operations and maintenance. No operational emissions would be generated
18 in the SJVAPCD. Consequently, operation of Alternative 1C would not contribute to or worsen
19 existing air quality conditions in the SJVAPCD. This impact would be less than significant. No
20 mitigation is required.

21 **Impact AQ-9: Exposure of Sensitive Receptors to Health Hazards from Localized Particulate**
22 **Matter in Excess of SMAQMD's Health-Based Concentration Thresholds**

23 **NEPA Effects:** As shown in Table 22-48, construction would increase PM10 and PM2.5 emissions in
24 SMAQMD, which may pose inhalation-related health risks for receptors exposed to certain
25 concentrations.

26 PM2.5 and PM10 concentrations at sensitive receptors locations were assessed using the EPA's
27 AERMOD dispersion. The methodology described in Section 22.3.1.3 provides a more detailed
28 summary of the approach used to conduct the analysis. Appendix 22C, *Bay Delta Conservation Plan*
29 *Air Dispersion Modeling and Health Risk Assessment for Construction Emissions*, provides an in-depth
30 discussion of the methodology and results.

31 Table 22-50 shows the highest predicted annual and daily (24-hour) PM10 and PM2.5
32 concentrations in SMAQMD. Exceedances of air district thresholds are shown in underline.

1 **Table 22-50. Alternative 1C PM10 and PM2.5 Concentration Results in SMAQMD**

Parameter	PM10		PM2.5	
	Annual ($\mu\text{g}/\text{m}^3$)	24-Hour ($\mu\text{g}/\text{m}^3$)	Annual ($\mu\text{g}/\text{m}^3$)	24-Hour ($\mu\text{g}/\text{m}^3$)
Maximum Value	0.13	<u>6.7</u>	0.02	1.13
<i>SMAQMD Threshold</i>	1	2.5	0.6	-

Appendix 22C, *Bay Delta Conservation Plan Air Dispersion Modeling and Health Risk Assessment for Construction Emissions*, includes modeling results for all receptors.
 $\mu\text{g}/\text{m}^3$ = micrograms per cubic meter

2

3 All estimated annual PM10 and PM2.5 concentrations would be less than SMAQMD's annual
4 thresholds. However, as shown in Table 22-50, the maximum predicted 24-hour PM10
5 concentration exceeds SMAQMD's threshold of 2.5 $\mu\text{g}/\text{m}^3$. Exceedances of the threshold would occur
6 at 287 receptor locations near intakes and intake work areas. The exceedances would be temporary
7 and occur intermittently due to soil disturbance during construction activities

8 As discussed above, DWR has identified several environmental commitments to reduce
9 construction-related particulate matter in the SMAQMD (see Appendix 3B, *Environmental*
10 *Commitments*). While these commitments will reduce localized particulate matter emissions,
11 concentrations at the analyzed receptor locations would still exceed SMAQMD's 24-hour PM10
12 threshold. The receptors exposed to PM10 concentrations in excess of SMAQMD's threshold could
13 experience increased risk for adverse human health effects. Mitigation Measure AQ-9 is available to
14 address this effect.

15 **CEQA Conclusion:** Respirable particulates pose a human health hazard by bypassing the defenses
16 within the mucous ciliary system and entering deep lung tissue. Construction of Alternative 1C
17 would result in PM10 concentrations at 287 receptor locations that are above the 24-hour
18 significance threshold established by the SMAQMD. As such, localized particulate matter
19 concentrations at analyzed receptors would result in significant human health impacts. Mitigation
20 Measure AQ-9 outlines a tiered strategy to reduce PM10 concentrations and public exposure to a
21 less-than-significant level.

22 **Mitigation Measure AQ-9: Implement Measures to Reduce Re-Entrained Road Dust and**
23 **Receptor Exposure to PM2.5 and PM10**

24 Please see Mitigation Measure AQ-9 under Impact AQ-9 in the discussion of Alternative 1A.

25 **Impact AQ-10: Exposure of Sensitive Receptors to Health Hazards from Localized Particulate**
26 **Matter in Excess of YSAQMD's Health-Based Concentration Thresholds**

27 **NEPA Effects:** As shown in Table 22-48, construction would increase PM10 and PM2.5 emissions in
28 YSAQMD, which may pose inhalation-related health risks for receptors exposed to certain
29 concentrations.

30 PM2.5 and PM10 concentrations at sensitive receptors locations were assessed using the EPA's
31 AERMOD dispersion. The methodology described in Section 22.3.1.3 provides a more detailed
32 summary of the approach used to conduct the analysis. Appendix 22C, *Bay Delta Conservation Plan*
33 *Air Dispersion Modeling and Health Risk Assessment for Construction Emissions*, provides an in-depth
34 discussion of the methodology and results.

1 As shown in Table 22-51, the maximum predicted PM2.5 and PM10 concentrations are less than
 2 YSAQMD's adopted thresholds. The project would also implement all air district recommended
 3 onsite fugitive dust controls, such as regular watering. Accordingly, this alternative's effect of
 4 exposure of sensitive receptors to localized particulate matter concentrations would not be adverse.

5 **Table 22-51. Alternative 1C PM10 and PM2.5 Concentration Results in YSAQMD**

Parameter	PM10		PM2.5	
	Annual ($\mu\text{g}/\text{m}^3$)	24-Hour ($\mu\text{g}/\text{m}^3$)	Annual ($\mu\text{g}/\text{m}^3$)	24-Hour ($\mu\text{g}/\text{m}^3$)
Maximum Value	0.55	8.7	0.08	1.4
<i>YSAQMD Threshold</i>	20	50	12	35

Appendix 22C, *Bay Delta Conservation Plan Air Dispersion Modeling and Health Risk Assessment for Construction Emissions*, includes modeling results for all receptors.
 $\mu\text{g}/\text{m}^3$ = micrograms per cubic meter

6

7 **CEQA Conclusion:** Respirable particulates pose human health hazard by bypassing the defenses
 8 within the mucous ciliary system and entering deep lung tissue. Construction of Alternative 1C
 9 would result in PM2.5 and PM10 concentrations at receptor locations that are below the significance
 10 thresholds adopted by the YSAQMD. As such, localized particulate matter concentrations at analyzed
 11 receptors would not result in significant human health impacts. No mitigation is required.

12 **Impact AQ-11: Exposure of Sensitive Receptors to Health Hazards from Localized Particulate**
 13 **Matter in Excess of BAAQMD's Health-Based Concentration Thresholds**

14 **NEPA Effects:** As shown in Table 22-48, construction would increase PM10 and PM2.5 emissions in
 15 BAAQMD, which may pose inhalation-related health risks for receptors exposed to certain
 16 concentrations.

17 PM2.5 and PM10 concentrations at sensitive receptors locations were assessed using the EPA's
 18 AERMOD dispersion. The methodology described in Section 22.3.1.3 provides a more detailed
 19 summary of the approach used to conduct the analysis. Appendix 22C, *Bay Delta Conservation Plan*
 20 *Air Dispersion Modeling and Health Risk Assessment for Construction Emissions*, provides an in-depth
 21 discussion of the methodology and results.

22 As shown in Table 22-52, maximum predicted PM2.5 concentrations are less than the significance
 23 threshold set by the BAAQMD. The project would also implement all air district recommended
 24 onsite fugitive dust controls, such as regular watering. Accordingly, this alternative's effect of
 25 exposure of sensitive receptors to localized particulate matter concentrations would not be adverse.

26 **Table 22-52. Alternative 1C PM10 and PM2.5 Concentration Results in BAAQMD**

Parameter	PM10		PM2.5	
	Annual ($\mu\text{g}/\text{m}^3$)	24-Hour ($\mu\text{g}/\text{m}^3$)	Annual ($\mu\text{g}/\text{m}^3$)	24-Hour ($\mu\text{g}/\text{m}^3$)
Maximum Value	1.1	108	0.2	19
<i>BAAQMD Threshold</i>	-	-	0.3	-

Appendix 22C, *Bay Delta Conservation Plan Air Dispersion Modeling and Health Risk Assessment for Construction Emissions*, includes modeling results for all receptors.
 $\mu\text{g}/\text{m}^3$ = micrograms per cubic meter

27

1 **CEQA Conclusion:** Respirable particulates pose human health hazard by bypassing the defenses
 2 within the mucous ciliary system and entering deep lung tissue. Construction of Alternative 1C
 3 would result in PM_{2.5} concentrations at receptor locations that are below the significance
 4 thresholds established by the BAAQMD. As such, localized particulate matter concentrations at
 5 analyzed receptors would not result in significant human health impacts. No mitigation is required.

6 **Impact AQ-12: Exposure of Sensitive Receptors to Health Hazards from Localized Particulate**
 7 **Matter in Excess of SJVAPCD's Health-Based Concentration Thresholds**

8 **NEPA Effects:** Construction of Alternative 1C would occur in the SMAQMD, YSAQMD, and BAAQMD.
 9 No construction emissions would be generated in the SJVAPCD. Consequently, Alternative 1C would
 10 not expose receptors to increased health risks from localized particulate matter since there would
 11 be no emissions. There would be no adverse effect.

12 **CEQA Conclusion:** Construction of Alternative 1C would occur in the SMAQMD, YSAQMD, and
 13 BAAQMD. No construction emissions would be generated in the SJVAPCD. Consequently, Alternative
 14 1C would not expose receptors to increased health risks from localized particulate matter since
 15 there would be no emissions. This impact would be less than significant. No mitigation is required.

16 **Impact AQ-13: Exposure of Sensitive Receptors to Health Hazards from Localized Carbon**
 17 **Monoxide**

18 Continuous engine exhaust may elevate localized CO concentrations. Receptors exposed to these CO
 19 "hot-spots" may have a greater likelihood of developing adverse health effects (as described in
 20 Section 22.1.2). CO hot-spots are typically observed at heavily congested intersections where a
 21 substantial number of gasoline-powered vehicles idle for prolonged durations throughout the day.
 22 Construction sites are less likely to result in localized CO hot-spots due to the nature of construction
 23 activities (Sacramento Metropolitan Air Quality Management District 2014), which normally utilize
 24 diesel-powered equipment for intermittent or short durations. Moreover, construction sites must
 25 comply with the Occupational Safety and Health Administration's (OSHA) CO exposure standards for
 26 onsite workers. Unlike regional pollutants (e.g., ROG and NO_x), CO concentrations also dissipate as a
 27 function of distance and will therefore be lower at offsite receptor locations. Accordingly, given that
 28 construction activities typically do not result in CO hot-spots, onsite concentrations must comply
 29 with OSHA standards, and CO levels dissipate as a function of distance, equipment-generated CO
 30 emissions (see Table 22-48) are not anticipated to result in adverse health hazards to sensitive
 31 receptors.

32 Construction traffic may contribute to increased roadway congestion, which could lead to conditions
 33 conducive to CO hot-spot formation. As shown in Table 19-25, the highest peak hour traffic volumes
 34 under BPBGPP—11,863 vehicles per hour—would occur on westbound Interstate 80 between
 35 Suisun Valley Road and State Route 12. This is about half of the congested traffic volume modeled by
 36 BAAQMD (24,000 vehicles per hour) that would be needed to contribute to a localized CO hot-spot,
 37 and less than half of the traffic volume modeled by SMAQMD (31,600 vehicles per hour). The
 38 BAAQMD's and SMAQMD's CO screening criteria were developed based on County average vehicle
 39 fleets that are primarily comprised of gasoline vehicles. Construction vehicles would be
 40 predominantly diesel trucks, which generate fewer CO emissions per idle-hour and vehicle mile
 41 traveled than gasoline-powered vehicles. Accordingly, the air district screening thresholds provide a
 42 conservative evaluation threshold for the assessment of potential CO emissions impacts during
 43 construction.

1 Based on the above analysis, even if all 11,863 vehicles on the modeled traffic segment drove
 2 through the same intersection in the peak hour, CO concentrations adjacent to the traveled way
 3 would not exceed the CAAQS or NAAQS according to BAAQMD's and SMAQMD's screening criteria.
 4 Thus, construction traffic is not anticipated to result in adverse health hazards to sensitive
 5 receptors.

6 **CEQA Conclusion:** Continuous engine exhaust may elevate localized CO concentrations. Receptors
 7 exposed to these CO "hot-spots" may have a greater likelihood of developing adverse health effects.
 8 Construction sites are less likely to result in localized CO hot-spots due to the nature of construction
 9 activities (Sacramento Metropolitan Air Quality Management District 2014), which normally utilize
 10 diesel-powered equipment for intermittent or short durations. Moreover, construction sites must
 11 comply with the OSHA CO exposure standards for onsite workers. Accordingly, given that
 12 construction activities typically do not result in CO hot-spots, onsite concentrations must comply
 13 with OSHA standards, and CO levels dissipate as a function of distance, equipment-generated CO
 14 emissions are not anticipated to result in significant health hazards to sensitive receptors. Similarly,
 15 peak-hour construction traffic on local roadways would not exceed BAAQMD's or SMAQMD's
 16 conservative screening criteria for the formation potential CO hot-spots. This impact would be less
 17 than significant. No mitigation is required.

18 **Impact AQ-14: Exposure of Sensitive Receptors to Health Hazards from Diesel Particulate**
 19 **Matter in Excess of SMAQMD's Chronic Non-Cancer and Cancer Risk Thresholds**

20 **NEPA Effects:** As shown in Table 22-48, construction of Alternative 1C would increase DPM
 21 emissions in SMAQMD, which poses inhalation-related chronic non-cancer hazard and cancer risks if
 22 adjacent receptors are exposed to significant DPM concentrations for prolonged durations.

23 Receptor exposure to construction DPM emissions was assessed by predicting the health risks in
 24 terms of excess cancer and non-cancer hazard impacts using the EPA's AERMOD dispersion
 25 modeling and guidance published by OEHHA. Based on HRA results detailed in Appendix 22C, *Bay*
 26 *Delta Conservation Plan Air Dispersion Modeling and Health Risk Assessment for Construction*
 27 *Emissions*, Alternative 1C would not exceed the SMAQMD's chronic non-cancer or cancer thresholds
 28 (Table 22-53) and, thus, would not expose sensitive receptors to substantial pollutant
 29 concentrations. This alternative's effect of exposure of sensitive receptors to DPM emissions and
 30 their health hazards during construction would not be adverse.

31 **CEQA Conclusion:** DPM generated during construction poses inhalation-related chronic non-cancer
 32 hazard and cancer risk if adjacent receptors are exposed to significant concentrations for prolonged
 33 durations. The DPM generated during Alternative 1C construction would not exceed the SMAQMD's
 34 chronic non-cancer or cancer thresholds, and thus would not expose sensitive receptors to
 35 substantial pollutant concentrations. Therefore, this impact for DPM emissions would be less than
 36 significant. No mitigation is required.

1 **Table 22-53. Alternative 1C Health Hazards from DPM Exposure in the Sacramento Metropolitan**
 2 **Air Quality Management District**

Parameter	Chronic Health Hazard	Cancer Health Risk
Maximum Value at MEI	0.001	3 per million
Thresholds	1	10 per million

Source: Appendix 22C, *Bay Delta Conservation Plan Air Dispersion Modeling and Health Risk Assessment for Construction Emissions*.

MEI = maximally exposed individual.

3 **Impact AQ-15: Exposure of Sensitive Receptors to Health Hazards from Diesel Particulate**
 4 **Matter in Excess of YSAQMD's Chronic Non-Cancer and Cancer Risk Thresholds**

5 **NEPA Effects:** As shown in Table 22-48, construction of Alternative 1C would increase DPM
 6 emissions in YSAQMD, which poses inhalation-related chronic non-cancer hazard and cancer risks if
 7 adjacent receptors are exposed to significant DPM concentrations for prolonged durations.

8 Receptor exposure to construction DPM emissions was assessed by predicting the health risks in
 9 terms of excess cancer and non-cancer hazard impacts using the EPA's AERMOD dispersion
 10 modeling and guidance published by OEHHA. Based on HRA results detailed in Appendix 22C, *Bay*
 11 *Delta Conservation Plan Air Dispersion Modeling and Health Risk Assessment for Construction*
 12 *Emissions*, Alternative 1C would not exceed the YSAQMD's chronic non-cancer or cancer thresholds
 13 (Table 22-54) and, thus, would not expose sensitive receptors to substantial pollutant
 14 concentrations. This alternative's effect of exposure of sensitive receptors to DPM emissions and
 15 their health hazards during construction would not be adverse.

16 **CEQA Conclusion:** DPM generated during construction poses inhalation-related chronic non-cancer
 17 hazard and cancer risk if adjacent receptors are exposed to significant concentrations for prolonged
 18 durations. The DPM generated during Alternative 1C construction would not exceed the YSAQMD's
 19 chronic non-cancer or cancer thresholds, and thus would not expose sensitive receptors to
 20 substantial pollutant concentrations. Therefore, this impact for DPM emissions would be less than
 21 significant. No mitigation is required.

22 **Table 22-54. Alternative 1C Health Hazards from DPM Exposure in the Yolo-Solano Air Quality**
 23 **Management District**

Parameter	Chronic Health Hazard	Cancer Health Risk
Maximum Value	0.003	9 per million
<i>YSAQMD Thresholds</i>	<i>1</i>	<i>10 per million</i>

Source: Appendix 22C, *Bay Delta Conservation Plan Air Dispersion Modeling and Health Risk Assessment for Construction Emissions*

Note: Emissions would not be generated in Yolo County. However, emissions from the adjacent Sacramento County could affect sensitive receptors in Yolo County.

24
 25 **Impact AQ-16: Exposure of Sensitive Receptors to Health Hazards from Diesel Particulate**
 26 **Matter in Excess of BAAQMD's Chronic Non-Cancer and Cancer Risk Thresholds**

27 **NEPA Effects:** As shown in Table 22-48, construction would increase DPM emissions in the
 28 BAAQMD, particularly near sites involving the greatest duration and intensity of construction

1 activities. DPM poses inhalation-related chronic non-cancer hazard and cancer risks if adjacent
2 receptors are exposed to significant DPM concentrations for prolonged durations.

3 Receptor exposure to construction DPM emissions was assessed by predicting the health risks in
4 terms of excess cancer and non-cancer hazard impacts using the EPA's AERMOD dispersion
5 modeling and guidance published by OEHHA. Based on the HRA results detailed in Appendix 22C,
6 *Bay Delta Conservation Plan Air Dispersion Modeling and Health Risk Assessment for Construction*
7 *Emissions*, Alternative 1C would not exceed the BAAQMD's chronic non-cancer hazard thresholds
8 (see Table 22-55) and, thus, would not expose sensitive receptors to substantial pollutant
9 concentrations from chronic exposure to DPM. However, 186 receptor locations were found to
10 exceed the BAAQMD's significance threshold for cancer risk. These exceedances are primarily due to
11 exhaust generated by the development of the bridge, canals and spoil areas. The high number of
12 exceedances is due to the proximity of a large track home development.

13 As discussed above, DWR has identified several environmental commitments to reduce
14 construction-related diesel particulate matter in the BAAQMD (see Appendix 3B, Environmental
15 Commitments). While these commitments will reduce localized diesel particulate matter emissions,
16 cancer risk levels were found to exceed the significance threshold at some of the analyzed receptors
17 and those locations could experience increased risk for adverse human health effects. Therefore, this
18 alternative's effect of exposure of sensitive receptors to DPM emissions health effects during
19 construction would be adverse.

20 Mitigation Measure AQ-16 would be available to reduce exposure to substantial cancer risk by
21 relocating affected receptors. Although Mitigation Measure AQ-16 would reduce the severity of this
22 effect, the BDCP proponents are not solely responsible for implementation of the measure. If a
23 landowner chooses not to accept DWR's offer of relocation assistance, an adverse effect in the form
24 excess cancer risk above air district thresholds would occur. Therefore, this effect would be adverse.
25 If, however, all landowners accept DWR's offer of relocation assistance, effects would not be
26 adverse.

27 **CEQA Conclusion:** DPM generated during construction poses inhalation-related chronic non-cancer
28 hazard and cancer risk if adjacent receptors are exposed to significant concentrations for prolonged
29 durations. The DPM generated during Alternative 1C construction would not exceed the BAAQMD's
30 chronic non-cancer hazard and thus would not expose sensitive receptors to substantial health
31 hazards for chronic exposure of DPM. However, the project emissions would result in exceedances
32 of the BAAQMD's cancer risk threshold. Therefore, this impact for DPM emissions would be
33 significant.

34 Mitigation Measure AQ-16 would be available to reduce exposure to substantial cancer risk by
35 relocating affected receptors. Although Mitigation Measure AQ-16 would reduce the severity of this
36 effect, the BDCP proponents are not solely responsible for implementation of the measure. If a
37 landowner chooses not to accept DWR's offer of relocation assistance, a significant impact in the
38 form excess cancer risk above air district thresholds would occur. Therefore, this effect would be
39 significant and unavoidable. If, however, all landowners accept DWR's offer of relocation assistance,
40 the impact would be less than significant.

41 **Mitigation Measure AQ-16: Relocate Sensitive Receptors to Avoid Excess Cancer Risk**

42 Please see Mitigation Measure AQ-16 under Impact AQ-16 in the discussion of Alternative 1A.

1 **Table 22-55. Alternative 1C Health Hazards from DPM Exposure in the Bay Area Air Quality**
 2 **Management District**

Alternative 1C	Chronic Health Hazard	Cancer Health Risk
Maximum Value	0.006	18 per million
<i>BAAQMD Thresholds</i>	1	10 per million

Source: Appendix 22C, *Bay Delta Conservation Plan Air Dispersion Modeling and Health Risk Assessment for Construction Emissions.*

3
 4 **Impact AQ-17: Exposure of Sensitive Receptors to Health Hazards from Diesel Particulate**
 5 **Matter in Excess of SJVAPCD's Chronic Non-Cancer and Cancer Risk Thresholds**
 6

7 **NEPA Effects:** Construction of Alternative 1C would occur in the SMAQMD, YSAQMD, and BAAQMD.
 8 No construction emissions would be generated in the SJVAPCD. Consequently, Alternative 1C would
 9 not expose receptors to increased health risks from localized particulate matter since there would
 10 be no emissions. There would be no adverse effect.

11 **CEQA Conclusion:** Construction of Alternative 1C would occur in the SMAQMD, YSAQMD, and
 12 BAAQMD. No construction emissions would be generated in the SJVAPCD. Consequently, Alternative
 13 1C would not expose receptors to increased health risks from localized particulate matter since
 14 there would be no emissions. This impact would be less than significant. No mitigation is required..
 15 ..

16 **Impact AQ-18: Exposure of Sensitive Receptors to *Coccidioides immitis* (Valley Fever)**

17 **NEPA Effects:** As discussed under Alternative 1A, earthmoving activities during construction could
 18 release *C. immitis* spores if filaments are present and other soil chemistry and climatic conditions
 19 are conducive to spore development. Receptors adjacent to the construction area may therefore be
 20 exposed to increase risk of inhaling *C. immitis* spores and subsequent development of Valley Fever.
 21 Dust-control measures are the primary defense against infection (United States Geological Survey
 22 2000). Implementation of advanced air-district recommended fugitive dust controls outlined in
 23 Appendix 3B, *Environmental Commitments*, would avoid dusty conditions and reduce the risk of
 24 contracting Valley Fever through routine watering and other controls. Therefore, this alternative's
 25 effect of exposure of sensitive receptors to increased Valley Fever risk during construction would
 26 not be adverse.

27 **CEQA Conclusion:** Construction of the water conveyance facility would involve earthmoving
 28 activities that could release *C. immitis* spores if filaments are present and other soil chemistry and
 29 climatic conditions are conducive to spore development. Receptors adjacent to the construction area
 30 may therefore be exposed to increase risk of inhaling *C. immitis* spores and subsequent development
 31 of Valley Fever. Implementation of air-district recommended fugitive dust controls outlined in
 32 Appendix 3B, *Environmental Commitments*, would avoid dusty conditions and reduce the risk of
 33 contracting Valley Fever through routine watering and other controls. Therefore, this impact would
 34 be less than significant. No mitigation is required.

1 **Impact AQ-19: Creation of Potential Odors Affecting a Substantial Number of People during**
 2 **Construction or Operation of the Proposed Water Conveyance Facility**

3 **NEPA Effects:** As discussed under Alternative 1A, odors from construction activities would be
 4 localized and generally confined to the immediate area surrounding the construction site. Moreover,
 5 odors would be temporary and localized, and they would cease once construction activities have
 6 been completed. Thus, it is not anticipated that construction of CM1 would create objectionable
 7 odors from construction equipment or asphalt paving.

8 Construction of the water conveyance facility would require removal of subsurface material during
 9 tunnel excavation and sediment removal. As discussed under Alternative 1A, geotechnical tests
 10 indicate that VOC levels in Plan Area soils are below the method detection limits, indicating that
 11 organic decay of exposed RTM and sediment will be relatively low (URS 2014). Moreover, drying
 12 and stockpiling of the removed RTM and sediment will occur under aerobic conditions, which will
 13 further limit any potential decomposition and associated malodorous products. Accordingly, it is not
 14 anticipated that tunnel and sediment excavation would create objectionable odors.

15 Typical facilities known to produce odors include landfills, wastewater treatment plants, food
 16 processing facilities, and certain agricultural activities. Alternative 1C would not result in the
 17 addition of facilities associated with odors, and as such, long-term operation of the water
 18 conveyance facility would not result in objectionable odors.

19 **CEQA Conclusion:** Alternative 1C would not result in the addition of major odor producing facilities.
 20 Diesel emissions during construction could generate temporary odors, but these would quickly
 21 dissipate and cease once construction is completed. Likewise, potential odors generated during
 22 asphalt paving would be addressed through mandatory compliance with air district rules and
 23 regulations. While tunnel excavation would unearth substantial quantities of RTM, geotechnical
 24 tests indicate that soils in the Plan Area have relatively low organic constituents. Moreover, drying
 25 and stockpiling of the removed RTM will occur under aerobic conditions, which will further limit
 26 any potential decomposition and associated malodorous products. Accordingly, the impact of
 27 exposure of sensitive receptors to potential odors would be less than significant. No mitigation is
 28 required.

29 **Impact AQ-20: Generation of Criteria Pollutants in the Excess of Federal *De Minimis***
 30 **Thresholds from Construction and Operation and Maintenance of the Proposed Water**
 31 **Conveyance Facility**

32 **NEPA Effects:** EPA's General Conformity Rule (40 CFR Parts 51 and 93) only applies to Federal
 33 actions that are taken in EPA-designated "nonattainment" or "maintenance" areas. Accordingly, as
 34 outlined in Section III.A of the General Conformity Rule, "only actions which cause emissions in
 35 designated nonattainment and maintenance areas are subject to the regulations". Criteria pollutant
 36 emissions resulting from construction and operation of Alternative 1C in the SFNA and SFBAAB are
 37 presented in Table 22-56 (no emissions would be generated in the SJVAB). Exceedances of the
 38 federal *de minimis* thresholds are shown in underlined text.

39 **Sacramento Federal Nonattainment Area**

40 As shown in Table 22-56, implementation of Alternative 1C would exceed the following SFNA
 41 federal *de minimis* thresholds:

- 42 ● ROG: 2019–2025

1 • NO_x: 2018–2028

2 ROG and NO_x are precursors to ozone and NO_x is a precursor to PM, for which the SFNA is in
3 nonattainment for the NAAQS. Since project emissions exceed the federal *de minimis* thresholds for
4 ROG and NO_x, a general conformity determination must be made to demonstrate that total direct
5 and indirect emissions of ROG and NO_x would conform to the appropriate SFNA SIP for each year of
6 construction in which the *de minimis* thresholds are exceeded.

7 NO_x is also a precursor to PM and can contribute to PM formation. As discussed above, Sacramento
8 County is currently designated maintenance for the PM10 NAAQS and portions of the SVAB are
9 designated nonattainment for the PM2.5 NAAQS. NO_x emissions in excess of 100 tons per year in
10 Sacramento County trigger a secondary PM10 precursor threshold, whereas NO_x emissions in excess
11 of 100 tons per year in the SVAB trigger a secondary PM2.5 precursor threshold. Since NO_x
12 emissions can contribute to PM formation, NO_x emissions in excess of these secondary precursor
13 thresholds could conflict with the applicable PM10 and PM2.5 SIPs. Accordingly, NO_x offsets pursued
14 for the purposes of general conformity for those years in which NO_x emissions exceed 100 tons must
15 occur within the federally designated PM2.5 nonattainment and PM10 maintenance areas of the
16 SVAB.

17 As shown in Table 22-48, NO_x emissions generated by construction activities in SMAQMD
18 (Sacramento County) would not exceed 100 tons per year. Accordingly, the project does not trigger
19 the secondary PM10 precursor threshold. As shown in Table 22-56, NO_x emissions in 2019 through
20 2027 would exceed 100 tons year in the SFNA. The project therefore triggers the secondary PM2.5
21 precursor threshold, requiring all NO_x offsets for 2019 through 2027 to occur within the federally
22 designated PM2.5 nonattainment area within the SFNA. The nonattainment boundary for PM2.5
23 includes all of Sacramento County and portions of Yolo, El Dorado, Solano, and Placer counties.

24 The federal lead agencies (Reclamation, USFWS, and NMFS) demonstrate that project emissions
25 would not result in a net increase in regional NO_x emissions, as construction-related NO_x would be
26 fully offset to zero through implementation of Mitigation Measures AQ-1a and 1b, which require
27 additional onsite mitigation and/or offsets. Mitigation Measures AQ-1a and 1b will ensure the
28 requirements of the mitigation and offset program are implemented and conformity requirements
29 for NO_x are met.

30 **Mitigation Measure AQ-1a: Mitigate and Offset Construction-Generated Criteria Pollutant**
31 **Emissions within the SFNA to Net Zero (0) for Emissions in Excess of General Conformity**
32 ***De Minimis* Thresholds (Where Applicable) and to Quantities below Applicable CEQA**
33 **Thresholds for Other Pollutants**

34 Please see Mitigation Measure AQ-1a under Impact AQ-1 in the discussion of Alternative 1A.

35 **Mitigation Measure AQ-1b: Develop an Alternative or Complementary Offsite Mitigation**
36 **Program to Mitigate and Offset Construction-Generated Criteria Pollutant Emissions**
37 **within the SFNA to Net Zero (0) for Emissions in Excess of General Conformity *De Minimis***
38 **Thresholds (Where Applicable) and to Quantities below Applicable CEQA Thresholds for**
39 **Other Pollutants**

40 Please see Mitigation Measure AQ-1b under Impact AQ-1 in the discussion of Alternative 1A.

1 **Table 22-56. Criteria Pollutant Emissions from Construction and Operation of Alternative 1C in**
 2 **Nonattainment and Maintenance Areas of the SFNA and SFBAAB (tons/year)**

Year	Sacramento Federal Nonattainment Area					
	ROG	NO _x ^a	CO ^b	PM10 ^c	PM2.5	SO ₂
2016	0	0	0	0	0	0
2017	0	0	0	0	0	0
2018	8	<u>58</u>	<1	1	6	<1
2019	<u>27</u>	<u>217^d</u>	0	6	14	1
2020	<u>33</u>	<u>271^d</u>	0	11	14	1
2021	<u>40</u>	<u>316^d</u>	1	16	17	1
2022	<u>35</u>	<u>274^d</u>	5	11	17	1
2023	<u>43</u>	<u>327^d</u>	5	8	19	2
2024	<u>48</u>	<u>353^d</u>	5	5	22	2
2025	<u>26</u>	<u>188^d</u>	4	4	14	1
2026	20	<u>137^d</u>	3	2	12	1
2027	19	<u>144^d</u>	4	1	15	1
2028	7	<u>53</u>	4	0	5	<1
2029	0	0	0	0	0	0
ELT	0.20	1.21	2.55	0.42	0.12	0.01
LLT	0.17	1.03	2.43	0.40	0.11	0.01
<i>De Minimis</i>	25	25	100	100	100	100
Year	San Francisco Bay Area Air Basin					
	ROG	NO _x ^a	CO ^b	PM10 ^e	PM2.5	SO ₂
2016	0	0	0	-	1	0
2017	0	0	0	-	0	0
2018	8	60	1	-	7	<1
2019	27	<u>212</u>	2	-	16	1
2020	21	<u>175</u>	2	-	10	1
2021	25	<u>207</u>	3	-	12	1
2022	20	<u>152</u>	4	-	10	1
2023	20	<u>144</u>	5	-	10	1
2024	23	<u>157</u>	6	-	11	1
2025	10	66	3	-	5	1
2026	7	48	3	-	4	<1
2027	3	27	3	-	4	<1
2028	<1	3	1	-	1	<1
2029	0	0	0	-	0	0
ELT	0.02	0.15	0.24	-	0.01	0.00
LLT	0.02	0.13	0.23	-	0.01	0.00
<i>De Minimis</i>	100	100	100	-	100	100

Notes

- ^a NO_x emissions in excess of 100 tons per year within federally designated PM10 and PM2.5 nonattainment or maintenance areas trigger a secondary PM10 and PM2.5 precursor threshold. NO_x emissions in excess of this secondary threshold could conflict with the applicable PM10 and PM2.5 SIPs. Accordingly, NO_x offsets pursued for the purposes of general conformity for those years in which NO_x emissions exceed 100 tons must occur within the federally designated PM2.5 nonattainment and PM10 maintenance areas, as applicable.
- ^b The proposed water conveyance facility is located within a federally designated CO attainment area. Accordingly, CO emissions generated by construction of CM1 are not subject to the General Conformity Rule and are excluded from the emissions summary and general conformity analysis (40 CFR Part 51 and 93, Section III.A). Emissions presented in the table are limited those generated by haul trucks, which would occur in federally designated CO maintenance area.
- ^c There are no federally designated PM10 maintenance areas in Yolo County. Accordingly, PM10 emissions generated by construction of CM1 in Yolo County are not subject to the General Conformity Rule and are excluded from the emissions summary and general conformity analysis for the SFNA (40 CFR Part 51 and 93, Section III.A). Emissions presented in the table are limited those generated within Sacramento County.
- ^d Refer to Table 22-48 for summary of emissions by air district. Emissions within SMAQMD would not exceed 100 tons.
- ^e There are no federally designated PM10 nonattainment or maintenance areas in the SFBAAB. Accordingly, PM10 emissions generated by construction of CM1 are not subject to the General Conformity Rule and are excluded from the emissions summary and general conformity analysis (40 CFR Part 51 and 93, Section III.A).

1

2 **San Francisco Bay Area Air Basin**

3 As shown in Table 22-56, implementation of Alternative 1C would exceed the following SFBAAB
4 federal *de minimis* thresholds:

- 5 • NO_x: 2019–2024

6 NO_x is a precursor to ozone, for which the SJVAB is in nonattainment for the NAAQS. Since project
7 emissions exceed the federal *de minimis* threshold for NO_x, a general conformity determination must
8 be made to demonstrate that total direct and indirect emissions of NO_x would conform to the
9 appropriate SFBAAB SIP for each year of construction in which the *de minimis* thresholds are
10 exceeded.

11 NO_x is also a precursor to PM and can contribute to PM formation. As discussed above, the SFBAAB
12 is currently designated nonattainment for the PM2.5 NAAQS. NO_x emissions in excess of 100 tons
13 per year trigger a secondary PM precursor threshold, and could conflict with the applicable PM2.5
14 SIP. Accordingly, NO_x offsets pursued for the purposes of general conformity for those years in
15 which NO_x emissions exceed 100 tons must occur within the federally designated PM2.5
16 nonattainment area of the SFBAAB, which is consistent with the larger nonattainment boundary for
17 ozone.

18 Although Mitigation Measures AQ-3a and AQ-3b would reduce NO_x, given the magnitude of
19 emissions; neither measure could feasibly reduce emissions to net zero. This impact would be
20 adverse. In the event that Alternative 1C is selected as the APA, Reclamation, USFWS, and NMFS
21 would need to demonstrate that conformity is met for NO_x through a local air quality modeling
22 analysis (i.e., dispersion modeling) or other acceptable methods to ensure project emissions do not
23 cause or contribute to any new exceedances of the NAAQS or increase the frequency or severity of
24 any existing exceedances.

1 **Mitigation Measure AQ-3a: Mitigate and Offset Construction-Generated Criteria Pollutant**
 2 **Emissions within the BAAQMD/SFBAAB to Net Zero (0) for Emissions in Excess of General**
 3 **Conformity *De Minimis* Thresholds (Where Applicable) and to Quantities below**
 4 **Applicable BAAQMD CEQA Thresholds for Other Pollutants**

5 Please see Mitigation Measure AQ-3a under Impact AQ-3 in the discussion of Alternative 1A.

6 **Mitigation Measure AQ-3b: Develop an Alternative or Complementary Offsite Mitigation**
 7 **Program to Mitigate and Offset Construction-Generated Criteria Pollutant Emissions**
 8 **within the BAAQMD/SFBAAB to Net Zero (0) for Emissions in Excess of General**
 9 **Conformity *De Minimis* Thresholds (Where Applicable) and to Quantities below**
 10 **Applicable BAAQMD CEQA Thresholds for Other Pollutants**

11 Please see Mitigation Measure AQ-3b under Impact AQ-3 in the discussion of Alternative 1A.

12 **CEQA Conclusion:** SFNA and SFBAAB are classified as nonattainment areas with regard to the ozone
 13 NAAQS and the impact of increases in criteria pollutant emissions above the air basin *de minimis*
 14 thresholds could conflict with or obstruct implementation of the applicable air quality plans. Since
 15 construction emissions in the SFNA and SFBAAB would exceed the *de minimis* thresholds for ROG
 16 (SFNA only) and NO_x, this impact would be significant.

17 Mitigation Measures AQ-1a and AQ-1b would ensure project emissions would not result in an
 18 increase in regional ROG or NO_x emissions in the SFNA. These measures would therefore ensure
 19 total direct and indirect ROG and NO_x emissions generated by the project in the SFNA would
 20 conform to the appropriate air basin SIPs by offsetting the action's emissions in the same or nearby
 21 area to net zero.

22 Although Mitigation Measures AQ-3a and AQ-3b would reduce NO_x in the SFBAAB, given the
 23 magnitude of emissions; neither measure could feasibly reduce emissions to net zero. This impact
 24 would be significant and unavoidable.

25 No emissions would be generated within the SJVAB and as such, the project would conform to the
 26 appropriate SJVAB SIPs.

27 **Impact AQ-21: Generation of Cumulative Greenhouse Gas Emissions during Construction of**
 28 **the Proposed Water Conveyance Facility**

29 **NEPA Effects:** GHG (CO₂, CH₄, N₂O, SF₆, and HFCs) emissions resulting from construction of
 30 Alternative 1C are presented in Table 22-57. Emissions with are presented with implementation of
 31 environmental commitments (see Appendix 3B, *Environmental Commitments*) and state mandates to
 32 reduce GHG emissions. State mandates include the RPS, LCFS, and Pavley. These mandates do not
 33 require additional action on the part of DWR, but will contribute to GHG emissions reductions. For
 34 example, Pavley and LCFS will improve the fuel efficiency of vehicles and reduce the carbon content
 35 of transportation fuels, respectively. Equipment used to construct the project will therefore be
 36 cleaner and less GHG intensive than if the state mandates had not been established.

37 Table 22-58 summarizes GHG emissions that would be generated in the BAAQMD, SMAQMD, and
 38 YSAQMD (no construction emissions would be generated in the SJVAPCD). The table does not
 39 include emissions from electricity generation as these emissions would be generated by power
 40 plants located throughout the state and the specific location of electricity-generating facilities is
 41 unknown (see discussion preceding this impact analysis). Due to the global nature of GHGs, the

determination of effects is based on total emissions generated by construction (Table 22-57). GHG emissions presented in Table 22-58 are therefore provided for information purposes only.

Construction of Alternative 1C would generate a total of 2.5 million metric tons of GHG emissions, after implementation of environmental commitments and state mandates. This is equivalent to adding 518,000 typical passenger vehicles to the road during construction (U.S. Environmental Protection Agency 2014e). As discussed in section 22.3.2, *Determination of Effects*, any increase in emissions above net zero associated with construction of the BDCP water conveyance features would be adverse. Accordingly, this effect would be adverse. Mitigation Measure AQ-21, which would develop a GHG Mitigation Program to reduce construction-related GHG emissions to net zero, is available address this effect.

Table 22-57. GHG Emissions from Construction of Alternative 1C (metric tons/year)^a

Year	Equipment and Vehicles (CO ₂ e)	Electricity (CO ₂ e)	Concrete Batching (CO ₂)	Total CO ₂ e
2016	0	0	499	499
2017	0	0	0	0
2018	42,159	359	62,034	104,552
2019	142,951	2,009	9,744	154,704
2020	130,349	9,650	60,545	200,544
2021	156,016	25,692	120,086	301,794
2022	144,322	36,078	182,008	362,409
2023	169,877	32,117	177,701	379,695
2024	183,293	33,500	212,603	429,396
2025	95,161	22,599	141,966	259,726
2026	74,368	8,068	34,020	116,457
2027	64,634	1,541	49,062	115,237
2028	26,032	41	9,653	35,726
2029	0	1	0	1
<i>Total</i>	<i>1,229,162</i>	<i>171,656</i>	<i>1,059,921</i>	<i>2,460,738</i>

^a Emissions estimates do not account for GHG flux from land disturbance. Surface and subsurface (e.g., tunneling) activities may oxidize peat soils, releasing GHG emissions. However, recent geotechnical surveys indicated that peat is negligible below 80 feet of depth. The tunnel will be placed below this range and the design adjusted if peat soils are discovered. Peat material encountered during surface excavation for non-tunnel work will be covered with top soil to reduce oxidation when needed.

Values may not total correctly due to rounding.

12

1 **Table 22-58. Total GHG Emissions from Construction of Alternative 1C by Air District**
 2 **(metric tons/year)**

Year	Equipment and Vehicles (CO ₂ e)	Concrete Batching (CO ₂) ^a	Total CO ₂ e ^b
SMAQMD	105,869	0	105,869
YSAQMD	642,905	635,952	1,278,857
BAAQMD	480,388	423,968	904,356

^a Emissions assigned to each air district based on the number of batching plants located in that air district.
^b Values may not total correctly due to rounding.

3
 4 **CEQA Conclusion:** Construction of Alternative 1C would generate a total of 2.5 million metric tons of
 5 GHG emissions. This is equivalent to adding 518,000 typical passenger vehicles to the road during
 6 construction (U.S. Environmental Protection Agency 2014e). As discussed in section 22.3.2,
 7 *Determination of Effects*, any increase in emissions above net zero associated with construction of
 8 the BDCP water conveyance features would be significant. Mitigation Measure AQ-21 would develop
 9 a GHG Mitigation Program to reduce construction-related GHG emissions to net zero. Accordingly,
 10 this impact would be less-than-significant with implementation of Mitigation Measure AQ-21.

11 **Mitigation Measure AQ-21: Develop and Implement a GHG Mitigation Program to Reduce**
 12 **Construction Related GHG Emissions to Net Zero (0)**

13 Please see Mitigation Measure AQ-21 under Impact AQ-21 in the discussion of Alternative 1A.

14 **Impact AQ-22: Generation of Cumulative Greenhouse Gas Emissions from Operation and**
 15 **Maintenance of the Proposed Water Conveyance Facility and Increased Pumping**

16 **NEPA Effects:** Operation of Alternative 1C would generate direct and indirect GHG emissions.
 17 Sources of direct emissions include heavy-duty equipment, on road crew trucks, and employee
 18 vehicle traffic. Indirect emissions would be generated predominantly by electricity consumption
 19 required for pumping as well as, maintenance, lighting, and other activities.

20 Table 22-59 summarizes long-term operational GHG emissions associated with operations,
 21 maintenance, and increased SWP pumping. Emissions were quantified for both ELT and LLT
 22 conditions, although activities would take place annually until project decommissioning. Emissions
 23 include state mandates to reduce GHG emissions (described in Impact AQ-21) are presented (there
 24 are no BDCP specific operational environmental commitments). Total CO₂e emissions are compared
 25 to both the No Action Alternative (NEPA point of comparison) and Existing Conditions (CEQA
 26 baseline). As discussed in Section 22.3.1.2, equipment emissions are assumed to be zero under both
 27 the No Action Alternative (NEPA point of comparison) and Existing Conditions (CEQA baseline). The
 28 equipment emissions presented in Table 22-59 are therefore representative of project impacts for
 29 both the NEPA and CEQA analysis.

Table 22-59. GHG Emissions from Operation, Maintenance, and Increased Pumping, Alternative 1C (metric tons/year)

Condition	Equipment CO ₂ e	Electricity CO ₂ e		Total CO ₂ e	
		NEPA Point of Comparison	CEQA Baseline	NEPA Point of Comparison	CEQA Baseline
ELT	526	-	252,441	-	252,967
LLT	513	75,973	32,822	76,486	33,335

Note: The NEPA point of comparison compares total CO₂e emissions after implementation of Alternative 1C to the No Action Alternative, whereas the CEQA baseline compares total CO₂e emissions to Existing Conditions.

Table 22-60 summarizes equipment CO₂e emissions that would be generated in the BAAQMD, SMAQMD, and SJVAPCD (no operational emissions would be generated in the YSAQMD). The table does not include emissions from SWP pumping as these emissions would be generated by power plants located throughout the state (see discussion preceding this impact analysis). GHG emissions presented in Table 22-60 are therefore provided for information purposes only.

Table 22-60. Equipment CO₂e Emissions from Operation and Maintenance of Alternative 1C by Air District (metric tons/year)^a

Air District	ELT	LLT
YSAQMD	481	465
SMAQMD	<1	<1
BAAQMD	46	48
Total	526	513

^a Emissions do not include emissions generated by increased SWP pumping.

SWP Operational and Maintenance GHG Emissions Analysis

Alternative 1C would add approximately 1,675 GWh³⁰ of additional net electricity demand to operation of the SWP each year assuming 2060 conditions. Conditions at 2060 (LLT) are used for this analysis because they yield the largest potential additional net electricity requirements and therefore represent the largest potential impact. This 1,675 GWh is based on assumptions of future conditions and operations and includes all additional energy required to operate the project with BDCP Alternative 1C including any additional energy associated with additional water being moved through the system.

In the CAP, DWR developed estimates of historical, current, and future GHG emissions. Figure 22-7 shows those emissions as they were projected in the CAP and how those emissions projections would change with the additional electricity demands needed to operate the SWP with the addition of BDCP Alternative 1C. As shown in Figure 22-7, in 2024, the year BDCP Alternative 1C is projected

³⁰ Estimated net energy demand differs slightly from what is presented in Chapter 21, *Energy*. This is because the above analysis includes energy needed for transmission and distribution of water along the Valley String, which is required to enable a comparison with the assumptions in DWR's CAP.

1 to go online, DWR total emissions jump from around 912,000 metric tons of CO₂e to nearly 1.6
2 million metric tons of CO₂e. This elevated level is approximately 340,000 metric tons of CO₂e above
3 DWR's designated GHG emissions reduction trajectory (red line, which is the linear interpolation
4 between DWR's 2020 GHG emissions goal and DWR's 2050 GHG emissions goal.) The projection
5 indicates that after the initial jump in emissions, existing GHG emissions reduction measures would
6 bring the elevated GHG emissions level back down below DWR's GHG emissions reduction trajectory
7 by 2044 and that DWR would still achieve its GHG emission reduction goal by 2050.

8 Because employing only DWR's existing GHG emissions reduction measures would result in a large
9 initial increase in emissions and result in DWR emissions exceeding the emissions reduction
10 trajectory for several years, DWR will take additional actions to reduce GHG emissions if BDCP
11 Alternative 1C is implemented.

12 The CAP sets forth DWR's plan to manage its activities and operations to achieve its GHG emissions
13 reduction goals. The CAP commits DWR to monitoring its emissions each year and evaluating its
14 emissions every five years to determine whether it is on a trajectory to achieve its GHG emissions
15 reduction goals. If it appears that DWR will not meet the GHG emission reduction goals established
16 in the plan, DWR may make adjustments to existing emissions reduction measures, devise new
17 measures to ensure achievement of the goals, or take other action. Given the scale of additional
18 emissions that BDCP Alternative 1C would add to DWR's total GHG emissions, DWR has evaluated
19 the most likely method that it would use to compensate for such an increase in GHG emissions:
20 modification of DWR's REPP. The DWR REPP (GHG emissions reduction measure OP-1 in the CAP)
21 describes the amount of additional renewable energy that DWR expects to purchase each year to
22 meet its GHG emissions reduction goals. The REPP lays out a long-term strategy for renewable
23 energy purchases, though actual purchases of renewable energy may not exactly follow the schedule
24 in the REPP and will ultimately be governed by actual operations, measured emissions, and
25 contracting.

26 Table 22-61 below shows how the REPP could be modified to accommodate BDCP Alternative 1C,
27 and shows that additional renewable energy resources could be purchased during years 2022–2025
28 over what was programmed in the original REPP. The net result of this change is that by 2026
29 DWR's energy portfolio would contain nearly 1,700 GWh of renewable energy (in addition to
30 hydropower generated at SWP facilities). This amount is nearly twice the amount called for in the
31 original DWR REPP (1,692 compared to 792). In later years, 2031–2050, DWR would bring on
32 slightly fewer additional renewable resources than programmed in the original REPP; however, over
33 13,000 additional GWh of electricity would be purchased under the modified REPP during the 40
34 year period 2011–2050 then under the original REPP. Figure 22-8 shows how this modified
35 Renewable Energy Procurement Plan would affect DWR's projected future emissions with BDCP
36 Alternative 1C.

1 **Table 22-61. Changes in Expected Renewable Energy Purchases 2011–2050 (Alternative 1C)**

Year(s)	Additional GWh of Renewable Power Purchased (Above previous year)	
	Original CAP	New CAP
2011–2020	36	36
2021	72	72
2022–2025	72	297
2026–2030	72	72
2031–2040	108	58
2041–2050	144	69
Total Cumulative	52,236	65,461

2

3 As shown in the analysis above and consistent with the analysis contained in the CAP and associated
4 Initial Study and Negative Declaration for the CAP, BDCP Alternative 1C would not adversely affect
5 DWR’s ability to achieve the GHG emissions reduction goals set forth in the CAP. Further, Alternative
6 1C would not conflict with any of DWR’s specific action GHG emissions reduction measures and
7 implements all applicable project level GHG emissions reduction measures as set forth in the CAP.
8 BDCP Alternative 1C is therefore consistent with the analysis performed in the CAP. There would be
9 no adverse effect.

10 **CEQA Conclusion:** SWP GHG emissions currently are below 1990 levels and achievement of the
11 goals of the CAP means that total DWR GHG emissions will be reduced to 50% of 1990 levels by
12 2020 and to 80% of 1990 levels by 2050. The implementation of BDCP Alternative 1C would not
13 affect DWR’s established emissions reduction goals or baseline (1990) emissions and therefore
14 would not result in a change in total DWR emissions that would be considered significant. Prior
15 adoption of the CAP by DWR already provides a commitment on the part of DWR to make all
16 necessary modifications to DWR’s REPP (as described above) or any other GHG emission reduction
17 measure in the CAP that are necessary to achieve DWR’s GHG emissions reduction goals. Therefore
18 no amendment to the approved CAP is necessary to ensure the occurrence of the additional GHG
19 emissions reduction activities needed to account for BDCP-related operational emissions. The effect
20 of BDCP Alternative 1C with respect to GHG emissions is less than cumulatively considerable and
21 therefore less than significant. No mitigation is required.

22 **Impact AQ-23: Generation of Cumulative Greenhouse Gas Emissions from Increased CVP**
23 **Pumping as a Result of Implementation of CM1**

24 **NEPA Effects:** As previously discussed, DWR’s CAP cannot be used to evaluate environmental
25 impacts associated with increased CVP pumping, as emissions associated with CVP are not under
26 DWR’s control and are not included in the CAP. Accordingly, GHG emissions resulting from increased
27 CVP energy use are evaluated separately from GHG emissions generated as a result of SWP energy
28 use.

29 Under Alternative 1C, operation of the CVP yields the generation of clean, GHG emissions-free,
30 hydroelectric energy. This electricity is sold into the California electricity market or directly to
31 energy users. Analysis of the No Action Alternative indicates that the CVP generates and will
32 continue to generate all of the electricity needed to operate the CVP system and approximately
33 3,500 GWh of excess hydroelectric energy that would be sold to energy users throughout California.
34 Implementation of Alternative 1C, however, would result in an increase of 167 GWh in the demand

1 for CVP generated electricity, which would result in a reduction of 167 GWh or electricity available
 2 for sale from the CVP to electricity users. This reduction in the supply of GHG emissions-free
 3 electricity to the California electricity users could result in a potential effect impact of the project, as
 4 these electricity users would have to acquire substitute electricity supplies that may result in GHG
 5 emissions (although additional conservation is also a possible outcome as well).

6 It is unknown what type of power source (e.g., renewable, natural gas) would be substituted for CVP
 7 electricity or if some of the lost power would be made up with higher efficiency. Given State
 8 mandates for renewable energy and incentives for energy efficiency, it is possible that a
 9 considerable amount of this power would be replaced by renewable resources or would cease to be
 10 needed as a result of higher efficiency. However, to ensure a conservative analysis, indirect
 11 emissions were quantified for the entire quantity of electricity (167 GWh) using the current and
 12 future statewide energy mix (adjusted to reflect RPS) (please refer to Appendix 22A, *Air Quality*
 13 *Analysis Methodology*, for additional detail on quantification methods).

14 Substitution of 167 GWh of electricity with a mix of sources similar to the current statewide mix
 15 would result in emissions of 46,714 metric tons of CO₂e; however, under expected future conditions
 16 (after full implementation of the RPS), emissions would be 36,300 metric tons of CO₂e.

17 Use of CVP hydroelectricity to meet increased electricity demand from operation of CVP facilities
 18 associated with Alternative 1C would reduce available CVP hydroelectricity to other California
 19 electricity users. Substitution of the lost electricity with electricity from other sources could
 20 indirectly result in an increase of GHG emissions that is comparable or larger than the level of GHG
 21 emissions that trigger mandatory GHG reporting for major facilities. As a result, these emissions
 22 could contribute to a cumulatively considerable effect and are therefore adverse. However, these
 23 emissions would be caused by dozens of independent electricity users, who had previously bought
 24 CVP power, making decisions about different ways to substitute for the lost power. These decisions
 25 are beyond the control of Reclamation or any of the other BDCP Lead Agencies. Further, monitoring
 26 to determine the actual indirect change in emissions as a result of BDCP actions would not be
 27 feasible. In light of the impossibility of predicting where any additional emissions would occur, as
 28 well as Reclamation's lack of regulatory authority over the purchasers of power in the open market,
 29 no workable mitigation is available or feasible.

30 **CEQA Conclusion:** Operation of the CVP is a federal activity beyond the control of any State agency
 31 such as DWR, and the power purchases by private entities or public utilities in the private
 32 marketplace necessitated by a reduction in available CVP-generated hydroelectric power are beyond
 33 the control of the State, just as they are beyond the control of Reclamation. For these reasons, there
 34 are no feasible mitigation measures that could reduce this potentially significant indirect impact,
 35 which is solely attributable to operations of the CVP and not the SWP, to a less than significant level.
 36 This impact is therefore determined to be significant and unavoidable.

37 **Impact AQ-24: Generation of Regional Criteria Pollutants from Implementation of CM2–CM11**

38 **NEPA Effects:** Generation of criteria pollutants under Alternative 1C would be similar to Alternative
 39 1A. Table 22-29 summarizes potential construction and operational emissions that may be
 40 generated by implementation of CM2–CM11. See the discussion of Impact AQ-24 under Alternative
 41 1A.

42 Criteria pollutants from restoration and enhancement actions could exceed applicable general
 43 conformity *de minimis* levels and applicable local thresholds. The effect would vary according to the

1 equipment used in construction of a specific conservation measure, the location, the timing of the
 2 actions called for in the conservation measure, and the air quality conditions at the time of
 3 implementation; these effects would be evaluated and identified in the subsequent project-level
 4 environmental analysis conducted for the CM2–CM11 restoration and enhancement actions. The
 5 effect of increases in emissions during implementation of CM2–CM11 in excess of applicable general
 6 conformity *de minimis* levels and air district regional thresholds (Table 22-8) could violate air basin
 7 SIPs and worsen existing air quality conditions. Mitigation Measure AQ-24 would be available to
 8 reduce this effect, but emissions would still be adverse.

9 **CEQA Conclusion:** Construction and operational emissions associated with the restoration and
 10 enhancement actions would result in a significant impact if the incremental difference, or increase,
 11 relative to Existing Conditions exceeds the applicable local air district thresholds shown in Table 22-
 12 8; these effects are expected to be further evaluated and identified in the subsequent project-level
 13 environmental analysis conducted for the CM2–CM11 restoration and enhancement actions.
 14 Mitigation Measure AQ-24 would be available to reduce this effect, but may not be sufficient to
 15 reduce emissions below applicable air quality management district thresholds (see Table 22-8).
 16 Consequently, this impact would be significant and unavoidable.

17 **Mitigation Measure AQ-24: Develop an Air Quality Mitigation Plan (AQMP) to Ensure Air**
 18 **District Regulations and Recommended Mitigation are Incorporated into Future**
 19 **Conservation Measures and Associated Project Activities**

20 Please see Mitigation Measure AQ-24 under Impact AQ-24 in the discussion of Alternative 1A.

21 **Impact AQ-25: Exposure of Sensitive Receptors to Health Hazards from Localized Particulate**
 22 **Matter, Carbon Monoxide, and Diesel Particulate Matter from Implementation of CM2–CM11**

23 **NEPA Effects:** The potential for Alternative 1C to expose sensitive receptors increased health
 24 hazards from localized PM, CO, and DPM would be similar to Alternative 1A. Activities shown in
 25 Table 22-29 with the greatest potential to have short or long-term air quality impacts are also
 26 anticipated to have the greatest potential to expose receptors to substantial pollutant
 27 concentrations. The effect would vary according to the equipment used, the location and timing of
 28 the actions called for in the conservation measure, the meteorological and air quality conditions at
 29 the time of implementation, and the location of receptors relative to the emission source. Potential
 30 health effects would be evaluated and identified in the subsequent project-level environmental
 31 analysis conducted for the CM2–CM11 restoration and enhancement actions.

32 The effect of increases in PM, CO, or DPM (cancer and non-cancer-risk) in excess of applicable air
 33 district thresholds (Table 22-8) at receptor locations could result in adverse health impacts.
 34 Mitigation Measures AQ-24 and AQ-25 would be available to reduce this effect.

35 **CEQA Conclusion:** Construction and operational emissions associated with the restoration and
 36 enhancement actions under Alternative 1C would result in a significant impact if PM, CO, or DPM
 37 (cancer and non-cancer-risk) concentrations at receptor locations exceed the applicable local air
 38 district thresholds shown in Table 22-8; these effects are expected to be further evaluated and
 39 identified in the subsequent project-level environmental analysis conducted for the CM2–CM11
 40 restoration and enhancement actions. Mitigation Measures AQ-24 and AQ-25 would ensure localized
 41 concentrations at receptor locations would be below applicable air quality management district
 42 thresholds (see Table 22-8). Consequently, this impact would be less than significant.

1 **Mitigation Measure AQ-24: Develop an Air Quality Mitigation Plan (AQMP) to Ensure Air**
 2 **District Regulations and Recommended Mitigation are Incorporated into Future**
 3 **Conservation Measures and Associated Project Activities**

4 Please see Mitigation Measure AQ-24 under Impact AQ-24 in the discussion of Alternative 1A.

5 **Mitigation Measure AQ-25: Prepare a Project-Level Health Risk Assessment to Reduce**
 6 **Potential Health Risks from Exposure to Localized DPM and PM Concentrations**

7 Please see Mitigation Measure AQ-25 under Impact AQ-25 in the discussion of Alternative 1A.

8 **Impact AQ-26: Creation of Potential Odors Affecting a Substantial Number of People from**
 9 **Implementation of CM2–CM11**

10 **NEPA Effects:** The potential for Alternative 1C to expose sensitive receptors increased odors would
 11 be similar to Alternative 1A. Accordingly, construction activities associated with CM2–CM11 are not
 12 anticipated to result in nuisance odors. Similarly, while restored land uses associated with the
 13 program have the potential to generate odors from natural processes, the emissions would be
 14 similar in origin and magnitude to the existing land use types in the restored area (e.g., managed
 15 wetlands). Moreover, specific odor effects would be evaluated and identified in the subsequent
 16 project-level environmental analysis conducted for the CM2–CM11 restoration and enhancement
 17 actions. Accordingly, odor-related effects associated with CM2–CM11 would not be adverse.

18 **CEQA Conclusion:** Alternative 1C would not result in the addition of major odor producing facilities.
 19 Diesel emissions during construction could generate temporary odors, but these would quickly
 20 dissipate and cease once construction is completed. Increases in wetland, tidal, and upland habitats
 21 may increase the potential for odors from natural processes. However, the origin and magnitude of
 22 odors would be similar to the existing land use types in the restored area (e.g., managed wetlands).
 23 Moreover, specific odor impacts would be evaluated and identified in the subsequent project-level
 24 environmental analysis conducted for the CM2–CM11 restoration and enhancement actions.
 25 Accordingly, the impact of exposure of sensitive receptors to potential odors would be less than
 26 significant. No mitigation is required.

27 **Impact AQ-27: Generation of Cumulative Greenhouse Gas Emissions from Implementation of**
 28 **CM2–CM11**

29 **NEPA Effects:** CM2–CM11 implemented under Alternative 1C would result in local GHG emissions
 30 from construction equipment and vehicle exhaust, similar to Alternative 1A. Restoration activities
 31 with the greatest potential for emissions include those that break ground and require use of
 32 earthmoving equipment. The type of restoration action and related construction equipment use are
 33 shown in Table 22-28. Implementing CM2–CM11 would also affect long-term sequestration rates
 34 through land use changes, such as conversion of agricultural land to wetlands, inundation of peat
 35 soils, drainage of peat soils, and removal or planting of carbon-sequestering plants.

36 Without additional information on site-specific characteristics associated with each of the
 37 restoration components, a complete assessment of GHG flux from CM2–CM11 is currently not
 38 possible. The effect of carbon sequestration and CH₄ generation would vary by land use type, season,
 39 and chemical and biological characteristics; these effects would be evaluated and identified in the
 40 subsequent project-level environmental analysis conducted for the CM2–CM11 restoration and
 41 enhancement actions. Mitigation Measures AQ-24 and AQ-27 would be available to reduce this

1 effect. However, due to the potential for increases in GHG emissions from construction and land use
2 change, this effect would be adverse.

3 **CEQA Conclusion:** The restoration and enhancement actions under Alternative 1C could result in a
4 significant impact if activities are inconsistent with applicable GHG reduction plans, do not
5 contribute to a lower carbon future, or generate excessive emissions, relative to other projects
6 throughout the state. These effects are expected to be further evaluated and identified in the
7 subsequent project-level environmental analysis conducted for the CM2–CM11 restoration and
8 enhancement actions. Mitigation Measures AQ-24 and AQ-27 would be available to reduce this
9 impact, but may not be sufficient to reduce to a less-than-significant level. Consequently, this impact
10 would be significant and unavoidable.

11 **Mitigation Measure AQ-24: Develop an Air Quality Mitigation Plan (AQMP) to Ensure Air**
12 **District Regulations and Recommended Mitigation are Incorporated into Future**
13 **Conservation Measures and Associated Project Activities**

14 Please see Mitigation Measure AQ-24 under Impact AQ-24 in the discussion of Alternative 1A.

15 **Mitigation Measure AQ-27: Prepare a Land Use Sequestration Analysis to Quantify and**
16 **Mitigate (as Needed) GHG Flux Associated with Conservation Measures and Associated**
17 **Project Activities**

18 Please see Mitigation Measure AQ-27 under Impact AQ-27 in the discussion of Alternative 1A.

19 **22.3.3.5 Alternative 2A—Dual Conveyance with Pipeline/Tunnel and Five**
20 **Intakes (15,000 cfs; Operational Scenario B)**

21 A total of five intakes would be constructed under Alternative 2A. For the purposes of this analysis,
22 it was assumed that Intakes 1–5 or Intakes 1–3 and 6–7 would be constructed under Alternative 2A.
23 Under this alternative, an intermediate forebay would be constructed, and the water conveyance
24 facility would be a buried pipeline and tunnels (Figures 3-2 and 3-3 in Chapter 3, *Description of*
25 *Alternatives*).

26 Construction and operation of Alternative 2A would require the use of electricity, which would be
27 supplied by the California electrical grid. Power plants located throughout the state supply the grid
28 with power, which will be distributed to the Study area to meet project demand. Power supplied by
29 statewide power plants will generate criteria pollutants. Because these power plants are located
30 throughout the state, criteria pollutant emissions associated with Alternative 2A electricity demand
31 cannot be ascribed to a specific air basin or air district within the Study area. Criteria pollutant
32 emissions from electricity consumption are therefore provided for informational purposes only and
33 are not included in the impact conclusion.

34 Electricity demand for construction of Alternative 2A would be to equal demand required for
35 Alternative 1A. Electricity emissions generated by Alternative 1A would therefore be representative
36 of emissions generated by Alternative 2A. Refer to Table 22-11 for a summary of electricity-related
37 criteria pollutants during construction (years 2016 through 2029) of Alternative 1A that are
38 applicable to this alternative. Operational emissions would be different from Alternative 1A and are
39 provided in Table 22-62.

1 **Table 22-62. Criteria Pollutant Emissions from Electricity Consumption: Net Project Operations,**
 2 **Alternative 2A (tons/year)^{a,b}**

Year	Analysis	ROG	CO	NO _x	PM10	PM2.5 ^c	SO ₂
ELT	CEQA	1	8	111	9	9	47
LLT	NEPA	2	15	199	17	17	84
LLT	CEQA	0	2	34	3	3	14

NEPA = Compares criteria pollutant emissions after implementation of Alternative 2A to the No Action Alternative.

CEQA = Compares criteria pollutant emissions after implementation of Alternative 2A to Existing Conditions.

^a Emissions assume implementation of RPS (see Appendix 22A, *Air Quality Analysis Methodology*). Power plants that generate electricity for the proposed project would be subject to local air district permitting requirements, including standards to implement BACT to reduce criteria pollutant emissions.

^b Because GHG emissions are cumulative (see Section 22.3.2.1) and not evaluated at the local air basin or air district level, they are discussed in Impacts AQ-21 and AQ-22. The GHG analysis for SWP power utilizes actual and forecasted GHG emissions rates for the SWP system, which differs slightly from the above analysis. Statewide grid average emission factors were utilized for the above analysis as criteria pollutant emission factors for SWP were unavailable. Please also note that the above analysis does not account for additional renewable energy that will be procured through modifications to DWR's REPP (see Impact AQ-22). Accordingly, the emissions results presented above represent a conservative assessment of potential criteria pollutant emissions.

^c Emission factors for PM2.5 are currently unavailable. Consequently, PM2.5 emissions were assumed to equal PM10 emissions. Because PM2.5 represents a fraction of PM10, this approach represents a conservative assessment of PM2.5 emissions from electricity consumption.

3

4 Alternative 2A would comprise physical/structural components similar to those under Alternative
 5 1A, but would entail an operable barrier along the San Joaquin separate fish movement corridor at
 6 the upstream confluence of Old River and the San Joaquin River (head of Old River). Emissions
 7 generated by construction of all features other than the head of Old River barrier under Alternative
 8 1A would be representative of emissions generated by Alternative 2A (refer to Table 22-12).

9 The head of Old River barrier would be constructed within the SJVAPCD between 2022 and 2024. To
 10 ensure the emissions analysis within the SJVAPCD accurately evaluates all project components,
 11 construction emissions associated with the head of Old River barrier were quantified and added to
 12 the emissions estimates for the SJVAPCD under Alternative 1A. The resulting emissions are provided
 13 in Table 22-63. Exceedances of the air district thresholds are shown in underlined text.

1 **Table 22-63. Criteria Pollutant Emissions from Construction of Alternative 2A within the SJVAPCD**
 2 **(tons/year)**

Year	ROG	NO _x	CO	PM10			PM2.5			SO ₂
				Exhaust	Dust	Total	Exhaust	Dust	Total	
2016	0	0	0	0	2	2	0	<1	<1	0
2017	0	0	0	0	0	0	0	0	0	0
2018	2	7	11	<1	12	12	<1	2	2	<1
2019	11	<u>81</u>	78	1	18	<u>19</u>	1	2	3	<1
2020	<u>20</u>	<u>139</u>	137	2	35	<u>36</u>	2	4	6	<1
2021	<u>30</u>	<u>217</u>	217	3	56	<u>58</u>	3	7	9	1
2022	<u>29</u>	<u>189</u>	214	2	33	<u>35</u>	2	4	6	1
2023	<u>25</u>	<u>154</u>	187	2	17	<u>19</u>	2	2	4	1
2024	<u>24</u>	<u>140</u>	171	1	17	<u>18</u>	1	2	4	<1
2025	<u>15</u>	<u>92</u>	105	1	13	14	1	2	3	<1
2026	6	<u>37</u>	35	<1	3	3	<1	<1	1	<1
2027	<1	<1	1	1	<1	1	1	<1	1	<1
2028	0	0	0	0	0	0	0	0	0	0
2029	0	0	0	0	0	0	0	0	0	0
Thresholds	10	10	-	-	-	15	-	-	15	-

3

4 Daily operation and maintenance activities under Alternative 2A would be the same as those
 5 generated under Alternative 1A (see Table 22-13). Yearly maintenance would be similar to those
 6 under Alternative 1A, but would also include annual inspections and sediment removal at the
 7 operable barrier in San Joaquin County. Table 22-64 summarizes annual criteria pollutant emissions
 8 associated with operation of Alternative 2A in the SJVAPCD.

9 **Table 22-64. Criteria Pollutant Emissions from Operation of Alternative 2A in SJVAPCD (tons per year)**

Condition	San Joaquin Valley Air Pollution Control District					
	ROG	NO _x	CO	PM10	PM2.5	SO ₂
ELT	0.01	0.08	0.14	0.02	0.01	<0.01
LLT	0.01	0.07	0.13	0.02	0.01	<0.01
Thresholds	10	10	-	15	15	-

10

11 **Impact AQ-1: Generation of Criteria Pollutants in Excess of the SMAQMD Regional Thresholds**
 12 **during Construction of the Proposed Water Conveyance Facility**

13 **NEPA Effects:** Construction activity required for Alternative 2A within the SMAQMD was assumed to
 14 equal activity required for Alternative 1A. Emissions generated by Alternative 1A would therefore
 15 be representative of emissions generated by Alternative 2A. As shown in Table 22-12, emissions
 16 would exceed SMAQMD's daily NO_x threshold, even with implementation of environmental
 17 commitments (see Appendix 3B, *Environmental Commitments*). Since NO_x is a precursor to ozone
 18 and PM, exceedances of SMAQMD's daily NO_x threshold could impact both regional ozone and PM

1 formation, which could worsen regional air quality and air basin attainment of the NAAQS and
2 CAAQS.

3 While equipment could operate at any work area identified for this alternative, the highest level of
4 NO_x and fugitive dust emissions in the SMAQMD are expected to occur at those sites where the
5 duration and intensity of construction activities would be greatest. This includes all intake and
6 intake pumping plant sites along the east bank of the Sacramento River, as well as the intermediate
7 forebay (and pumping plant) site west of South Stone Lake and east of the Sacramento River. See the
8 discussion of Impact AQ-1 under Alternative 1A.

9 Environmental commitments outlined in Appendix 3B, *Environmental Commitments*, will reduce
10 construction-related emissions; however, as shown in Table 22-12, NO_x and emissions would still
11 exceed SMAQMD's threshold identified in Table 22-8 and would result in an adverse effect to
12 regional air quality. Mitigation Measures AQ-1a and AQ-1b would be available to reduce NO_x
13 emissions, and would thus address regional effects related to secondary ozone and PM formation.

14 **CEQA Conclusion:** NO_x emissions generated during construction would exceed SMAQMD threshold
15 identified in Table 22-8. Since NO_x is a precursor to ozone and PM, exceedances of SMAQMD's daily
16 NO_x threshold could impact both regional ozone and PM formation. SMAQMD's regional emissions
17 thresholds (Table 22-8) have been adopted to ensure projects do not hinder attainment of the
18 CAAQS or NAAQS. The impact of generating NO_x emissions in excess of local air district thresholds
19 would therefore violate applicable air quality standards in the Study area and could contribute to or
20 worsen an existing air quality conditions. This would be a significant impact. Mitigation Measures
21 AQ-1a and AQ-1b would be available to reduce NO_x emissions to a less-than-significant level by
22 offsetting emissions to quantities below SMAQMD CEQA thresholds (see Table 22-8).

23 **Mitigation Measure AQ-1a: Mitigate and Offset Construction-Generated Criteria Pollutant**
24 **Emissions within the SFNA to Net Zero (0) for Emissions in Excess of General Conformity**
25 ***De Minimis* Thresholds (Where Applicable) and to Quantities below Applicable CEQA**
26 **Thresholds for Other Pollutants**

27 Please see Mitigation Measure AQ-1a under Impact AQ-1 in the discussion of Alternative 1A.

28 **Mitigation Measure AQ-1b: Develop an Alternative or Complementary Offsite Mitigation**
29 **Program to Mitigate and Offset Construction-Generated Criteria Pollutant Emissions**
30 **within the SFNA to Net Zero (0) for Emissions in Excess of General Conformity *De Minimis***
31 **Thresholds (Where Applicable) and to Quantities below Applicable CEQA Thresholds for**
32 **Other Pollutants**

33 Please see Mitigation Measure AQ-1b under Impact AQ-1 in the discussion of Alternative 1A.

34 **Impact AQ-2: Generation of Criteria Pollutants in Excess of the YSAQMD Regional Thresholds**
35 **during Construction of the Proposed Water Conveyance Facility**

36 **NEPA Effects:** Construction activity required for Alternative 2A within the YSAQMD was assumed to
37 equal activity required for Alternative 1A. Emissions generated by Alternative 1A would therefore
38 be representative of emissions generated by Alternative 2A. As shown in Table 22-12, emissions
39 would exceed YSAQMD's NO_x and PM₁₀ thresholds, even with implementation of environmental
40 commitments (see Appendix 3B, *Environmental Commitments*).

1 Since NO_x is a precursor to ozone and PM, exceedances of SMAQMD's daily NO_x threshold could
 2 impact both regional ozone and PM formation, which could worsen regional air quality and air basin
 3 attainment of the NAAQS and CAAQS. Similarly, exceedances of YSAQMD's PM10 threshold could
 4 impede attainment of the NAAQS and CAAQS for PM10. All emissions generated within YSAQMD are
 5 a result of haul truck movement for equipment and material delivery.

6 Environmental commitments outlined in Appendix 3B, *Environmental Commitments*, will reduce
 7 construction-related emissions; however, as shown in Table 22-12, NO_x and PM10 emissions would
 8 still exceed the applicable YSAQMD thresholds identified in Table 22-8 and result in an adverse
 9 regional effect to air quality. Mitigation Measures AQ-1a and AQ-1b are available to reduce NO_x and
 10 PM10 emissions, and would thus address regional effects related to secondary ozone and PM
 11 formation.

12 **CEQA Conclusion:** Emissions of NO_x and PM10 generated during construction would exceed
 13 YSAQMD's regional thresholds identified in Table 22-8. Since NO_x is a precursor to ozone and NO_x is
 14 a precursor to PM, exceedances of YSAQMD's NO_x threshold could impact both regional ozone and
 15 PM formation, which could worsen regional air quality and air basin attainment of the NAAQS and
 16 CAAQS. Similarly, exceedances of YSAQMD's PM10 threshold could impede attainment of the NAAQS
 17 and CAAQS for PM10. YSAQMD's regional emissions thresholds (Table 22-8) have been adopted to
 18 ensure projects do not hinder attainment of the CAAQS or NAAQS. The impact of generating NO_x and
 19 PM10 in excess of local air district regional thresholds would therefore violate applicable air quality
 20 standards in the study area and could contribute to or worsen an existing air quality conditions. This
 21 would be a significant impact. Mitigation Measures AQ-1a and AQ-1b would be available to reduce
 22 NO_x and PM10 emissions to a less-than-significant level by offsetting emissions to quantities below
 23 YSAQMD CEQA thresholds (see Table 22-8).

24 **Mitigation Measure AQ-1a: Mitigate and Offset Construction-Generated Criteria Pollutant**
 25 **Emissions within the SFNA to Net Zero (0) for Emissions in Excess of General Conformity**
 26 ***De Minimis* Thresholds (Where Applicable) and to Quantities below Applicable CEQA**
 27 **Thresholds for Other Pollutants**

28 Please see Mitigation Measure AQ-1a under Impact AQ-1 in the discussion of Alternative 1A.

29 **Mitigation Measure AQ-1b: Develop an Alternative or Complementary Offsite Mitigation**
 30 **Program to Mitigate and Offset Construction-Generated Criteria Pollutant Emissions**
 31 **within the SFNA to Net Zero (0) for Emissions in Excess of General Conformity *De Minimis***
 32 **Thresholds (Where Applicable) and to Quantities below Applicable CEQA Thresholds for**
 33 **Other Pollutants**

34 Please see Mitigation Measure AQ-1b under Impact AQ-1 in the discussion of Alternative 1A.

35 **Impact AQ-3: Generation of Criteria Pollutants in Excess of the BAAQMD Regional Thresholds**
 36 **during Construction of the Proposed Water Conveyance Facility**

37 **NEPA Effects:** Construction activity required for Alternative 2A within the BAAQMD was assumed to
 38 equal activity required for Alternative 1A. Emissions generated by Alternative 1A would therefore
 39 be representative of emissions generated by Alternative 2A. As shown in Table 22-12, emissions
 40 would exceed BAAQMD's daily thresholds for ROG and NO_x, even with implementation of
 41 environmental commitments. All other pollutants would be below air district thresholds and
 42 therefore would not result in an adverse air quality effect.

1 Since ROG and NO_x are precursors to ozone and NO_x is a precursor to PM, exceedances of BAAQMD's
 2 ROG and NO_x thresholds could impact both regional ozone and PM formation, which could worsen
 3 regional air quality and air basin attainment of the NAAQS and CAAQS.

4 While equipment could operate at any work area identified for this alternative, the highest level of
 5 ROG and NO_x emissions in the BAAQMD are expected to occur at those sites where the duration and
 6 intensity of construction activities would be greatest, including the site of the Byron Tract Forebay
 7 adjacent to and south of Clifton Court Forebay.

8 Environmental commitments outlined in Appendix 3B, *Environmental Commitments*, will reduce
 9 construction-related emissions; however, as shown in Table 22-12, ROG and NO_x emissions would
 10 still exceed the applicable air district thresholds identified in Table 22-8 and result in an adverse
 11 effect to air quality. Mitigation Measures AQ-3a and AQ-3b would be available to address this effect.

12 **CEQA Conclusion:** Emissions of ROG and NO_x precursors generated during construction would
 13 exceed BAAQMD regional thresholds identified in Table 22-8. Since ROG and NO_x are precursors to
 14 ozone and NO_x is a precursor to PM, exceedances of BAAQMD's ROG and NO_x thresholds could
 15 impact both regional ozone and PM formation. BAAQMD's regional emissions thresholds (Table 22-
 16 8) have been adopted to ensure projects do not hinder attainment of the CAAQS or NAAQS. The
 17 impact of generating ROG and NO_x emissions in excess of local air district regional thresholds would
 18 therefore violate applicable air quality standards in the Study area and could contribute to or
 19 worsen an existing air quality conditions. This would be a significant impact. Mitigation Measures
 20 AQ-3a and AQ-3b would be available to reduce ROG and NO_x emissions to a less-than-significant
 21 level by offsetting emissions to quantities below BAAQMD CEQA thresholds (see Table 22-8).

22 **Mitigation Measure AQ-3a: Mitigate and Offset Construction-Generated Criteria Pollutant**
 23 **Emissions within BAAQMD/SFBAAB to Net Zero (0) for Emissions in Excess of General**
 24 **Conformity *De Minimis* Thresholds (Where Applicable) and to Quantities below**
 25 **Applicable BAAQMD CEQA Thresholds for Other Pollutants**

26 Please see Mitigation Measure AQ-3a under Impact AQ-3 in the discussion of Alternative 1A.

27 **Mitigation Measure AQ-3b: Develop an Alternative or Complementary Offsite Mitigation**
 28 **Program to Mitigate and Offset Construction-Generated Criteria Pollutant Emissions**
 29 **within the BAAQMD/SFBAAB to Net Zero (0) for Emissions in Excess of General**
 30 **Conformity *De Minimis* Thresholds (Where Applicable) and to Quantities below**
 31 **Applicable BAAQMD CEQA Thresholds for Other Pollutants**

32 Please see Mitigation Measure AQ-3b under Impact AQ-3 in the discussion of Alternative 1A.

33 **Impact AQ-4: Generation of Criteria Pollutants in Excess of the SJVAPCD Regional Thresholds**
 34 **during Construction of the Proposed Water Conveyance Facility**

35 **NEPA Effects:** As shown in Table 22-63, construction emissions would exceed SJVAPCD's annual
 36 thresholds for the following years and pollutants, even with implementation of environmental
 37 commitments (see Appendix 3B, *Environmental Commitments*). All other pollutants would be below
 38 air district thresholds and therefore would not result in an adverse air quality effect.

- 39 ● ROG: 2020–2025
- 40 ● NO_x: 2019–2026

1 • PM10: 2019–2024

2 Since ROG and NO_x are precursors to ozone and NO_x is a precursor to PM, exceedances of SJVAPCD's
3 ROG and NO_x thresholds could impact both regional ozone and PM formation, which could worsen
4 regional air quality and air basin attainment of the NAAQS and CAAQS. Similarly, exceedances of
5 SJVAPCD's PM10 threshold could impede attainment of the NAAQS and CAAQS for PM10.

6 While equipment could operate at any work area identified for this alternative, the highest level of
7 ROG, NO_x, and PM10 emissions in the SJVAPCD is expected to occur at those sites where the
8 duration and intensity of construction activities would be greatest. This includes all temporary and
9 permanent utility sites, as well as all construction sites along the pipeline/tunnel conveyance
10 alignment. For a map of the proposed tunnel alignment, see Mapbook Figure M3-1.

11 Environmental commitments outlined in Appendix 3B, *Environmental Commitments* will reduce
12 construction-related emissions; however, as shown in Table 22-63, ROG, NO_x, and PM10 emissions
13 would still exceed the applicable air district thresholds identified in Table 22-8 and result in a
14 regional adverse effect to air quality. Mitigation Measures AQ-4a and AQ-4b are available to reduce
15 ROG, NO_x, and PM10 emissions, and would thus address regional effects related to secondary ozone
16 and PM formation.

17 **CEQA Conclusion:** Emissions of ROG, NO_x, and PM10 generated during construction would exceed
18 SJVAPCD's regional significance threshold identified in Table 22-8. Since ROG and NO_x are
19 precursors to ozone and NO_x is a precursor to PM, exceedances of SJVAPCD's ROG and NO_x
20 thresholds could impact both regional ozone and PM formation, which could worsen regional air
21 quality and air basin attainment of the NAAQS and CAAQS. Similarly, exceedances of SJVAPCD's
22 PM10 threshold could impede attainment of the NAAQS and CAAQS for PM10. SJVAPCD's regional
23 emissions thresholds (Table 22-8) have been adopted to ensure projects do not hinder attainment of
24 the CAAQS or NAAQS. The impact of generating ROG, NO_x, and PM10 in excess of local air district
25 thresholds would therefore violate applicable air quality standards in the Study area and could
26 contribute to or worsen an existing air quality conditions. This impact would therefore be
27 significant. This would be a significant impact. Mitigation Measures AQ-4a and AQ-4b would be
28 available to reduce ROG, NO_x, and PM10 emissions to a less-than-significant level by offsetting
29 emissions to quantities below SJVAPCD CEQA thresholds (see Table 22-8).

30 **Mitigation Measure AQ-4a: Mitigate and Offset Construction-Generated Criteria Pollutant**
31 **Emissions within SJVAPCD/SJVAB to Net Zero (0) for Emissions in Excess of General**
32 **Conformity *De Minimis* Thresholds (Where Applicable) and to Quantities below**
33 **Applicable SJVAPCD CEQA Thresholds for Other Pollutants**

34 Please see Mitigation Measure AQ-4a under Impact AQ-4 in the discussion of Alternative 1A.

35 **Mitigation Measure AQ-4b: Develop an Alternative or Complementary Offsite Mitigation**
36 **Program to Mitigate and Offset Construction-Generated Criteria Pollutant Emissions**
37 **within the SJVAPCD/SJVAB to Net Zero (0) for Emissions in Excess of General Conformity**
38 ***De Minimis* Thresholds (Where Applicable) and to Quantities below Applicable SJVAPCD**
39 **CEQA Thresholds for Other Pollutants**

40 Please see Mitigation Measure AQ-4b under Impact AQ-4 in the discussion of Alternative 1A.

1 **Impact AQ-5: Generation of Criteria Pollutants in Excess of the SMAQMD Regional Thresholds**
 2 **from Operation and Maintenance of the Proposed Water Conveyance Facility**

3 *NEPA Effects:* Operations and maintenance activities in SMAQMD required for Alternative 2A were
 4 assumed to equal activities required for Alternative 1A. Emissions generated by Alternative 1A
 5 would therefore be representative of emissions generated by Alternative 2A. As shown in Table 22-
 6 13, emissions would not exceed SMAQMD's regional thresholds of significance and there would be
 7 no adverse effect. See the discussion of Impact AQ-5 under Alternative 1A.

8 *CEQA Conclusion:* Emissions generated during operation and maintenance activities would not
 9 exceed SMAQMD thresholds for criteria pollutants. SMAQMD's regional emissions thresholds (Table
 10 22-8) have been adopted to ensure projects do not hinder attainment of the CAAQS or NAAQS. The
 11 impact of generating emissions in excess of local air district would therefore violate applicable air
 12 quality standards in the Study area and could contribute to or worsen an existing air quality
 13 conditions. Because project operations would not exceed SMAQMD regional thresholds, the impact
 14 would be less than significant. No mitigation is required.

15 **Impact AQ-6: Generation of Criteria Pollutants in Excess of the YSAQMD Regional Thresholds**
 16 **from Operation and Maintenance of the Proposed Water Conveyance Facility**

17 *NEPA Effects:* Alternative 2A would not involve the construction of any permanent features in the
 18 YSAQMD that would require routine operations and maintenance. No operational emissions would
 19 be generated in the YSAQMD. Consequently, operation of Alternative 2A would neither exceed the
 20 YSAQMD thresholds of significance nor result in an adverse effect on air quality.

21 *CEQA Conclusion:* No operational or maintenance emissions generated by the alternative would
 22 occur in YSAQMD and, therefore, YSAQMD's regional thresholds would not be exceeded (see Table
 23 22-8). This impact would be less than significant. No mitigation is required.

24 **Impact AQ-7: Generation of Criteria Pollutants in Excess of the BAAQMD Regional Thresholds**
 25 **from Operation and Maintenance of the Proposed Water Conveyance Facility**

26 *NEPA Effects:* Operations and maintenance activities in BAAQMD required for Alternative 2A were
 27 assumed to equal activities required for Alternative 1A. Emissions generated by Alternative 1A
 28 would therefore be representative of emissions generated by Alternative 2A. As shown in Table 22-
 29 13, emissions would not exceed BAAQMD's regional thresholds of significance and there would be
 30 no adverse effect. See the discussion of Impact AQ-7 under Alternative 1A.

31 *CEQA Conclusion:* Emissions generated during operation and maintenance activities would not
 32 exceed BAAQMD regional thresholds for criteria pollutants. BAAQMD's regional emissions
 33 thresholds (Table 22-8) have been adopted to ensure projects do not hinder attainment of the
 34 CAAQS. The impact of generating emissions in excess of local air district thresholds would violate
 35 applicable air quality standards in the Study area and could contribute to or worsen an existing air
 36 quality conditions. Because project operations would not exceed BAAQMD regional thresholds, the
 37 impact would be less than significant. No mitigation is required.

38 **Impact AQ-8: Generation of Criteria Pollutants in Excess of the SJVAPCD Regional Thresholds**
 39 **from Operation and Maintenance of the Proposed Water Conveyance Facility**

40 *NEPA Effects:* Operations and maintenance in SJVAPCD include annual inspections, sediment
 41 removal, and tunnel dewatering (see Appendix 22A, *Air Quality Analysis Methodology*, for additional

1 detail). The highest concentration of operational emissions in the SJVPACD is expected at routine
 2 inspection sites along the pipeline/tunnel conveyance alignment and at the operable barrier. As
 3 shown in Table 22-64, operation and maintenance activities under Alternative 2A would not exceed
 4 SJVPACD's regional thresholds of significance (see Table 22-8). Accordingly, project operations
 5 would not contribute to or worsen existing air quality exceedances. There would be no adverse
 6 effect.

7 **CEQA Conclusion:** Emissions generated during operation and maintenance activities would not
 8 exceed SJVPACD's regional thresholds of significance. SJVPACD's regional emissions thresholds
 9 (Table 22-8) have been adopted to ensure projects do not hinder attainment of the CAAQS. The
 10 impact of generating emissions in excess of local air district thresholds would violate applicable air
 11 quality standards in the Study area and could contribute to or worsen an existing air quality
 12 conditions. Because project operations would not exceed SJVPACD regional thresholds, the impact
 13 would be less than significant. No mitigation is required.

14 **Impact AQ-9: Exposure of Sensitive Receptors to Health Hazards from Localized Particulate**
 15 **Matter in Excess of SMAQMD's Health-Based Concentration Thresholds**

16 **NEPA Effects:** Construction activity required for Alternative 2A within the SMAQMD was assumed to
 17 equal activity required for Alternative 1A. Emissions and associated health risks from exposure to
 18 localized PM under Alternative 1A would therefore be representative of emissions and health risks
 19 generated by Alternative 2A.

20 As shown in Table 22-14, concentrations of annual PM10 and PM2.5 would be below the SMAQMD's
 21 significance thresholds. However, concentrations of PM10 would exceed SMAQMD's 24-hour PM10
 22 threshold near intakes and intake work areas, even with implementation of environmental
 23 commitments (see Appendix 3B, *Environmental Commitments*). Receptors exposed to PM10
 24 concentrations in excess of SMAQMD's threshold could experience increased risk for adverse human
 25 health effects. Mitigation Measure AQ-9 is available to address this effect.

26 **CEQA Conclusion:** Respirable particulates pose a human health hazard by bypassing the defenses
 27 within the mucous ciliary system and entering deep lung tissue. Construction of Alternative 2A
 28 would result in the short-term exposure of receptors to PM10 concentrations that exceed SMAQMD
 29 threshold. This would be a significant impact. Mitigation Measure AQ-9 outlines a tiered strategy to
 30 reduce PM10 concentrations and public exposure to a less-than-significant level.

31 **Mitigation Measure AQ-9: Implement Measures to Reduce Re-Entrained Road Dust and**
 32 **Receptor Exposure to PM2.5 and PM10**

33 Please see Mitigation Measure AQ-9 under Impact AQ-9 in the discussion of Alternative 1A.

34 **Impact AQ-10: Exposure of Sensitive Receptors to Health Hazards from Localized Particulate**
 35 **Matter in Excess of YSAQMD's Health-Based Concentration Thresholds**

36 **NEPA Effects:** Construction activity required for Alternative 2A within the YSAQMD was assumed to
 37 equal activity required for Alternative 1A. Emissions and associated health risks from exposure to
 38 localized PM under Alternative 1A would therefore be representative of emissions and health risks
 39 generated by Alternative 2A. As shown previously in Table 22-15, concentrations of particulate
 40 matter would not exceed YSAQMD's 24-hour and annual PM10 and PM2.5 thresholds and
 41 consequently would not result in an adverse effect to human health.

1 **CEQA Conclusion:** Respirable particulates pose a human health hazard by bypassing the defenses
 2 within the mucous ciliary system and entering deep lung tissue. Construction of Alternative 2A
 3 would result in PM_{2.5} and PM₁₀ concentrations at receptor locations that are below the significance
 4 thresholds established by the YSAQMD. As such, localized particulate matter concentrations at
 5 analyzed receptors would not result in significant human health impacts. No mitigation is required.

6 **Impact AQ-11: Exposure of Sensitive Receptors to Health Hazards from Localized Particulate**
 7 **Matter in Excess of BAAQMD's Health-Based Concentration Thresholds**

8 **NEPA Effects:** Construction activity required for Alternative 2A within the BAAQMD was assumed to
 9 equal activity required for Alternative 1A. Emissions and associated health risks from exposure to
 10 localized PM under Alternative 1A would therefore be representative of emissions and health risks
 11 generated by Alternative 2A. As shown in Table 22-16, concentrations of particulate matter would
 12 not exceed BAAQMD's annual PM_{2.5} threshold and consequently would not result in an adverse
 13 effect to human health.

14 **CEQA Conclusion:** Respirable particulates pose a human health hazard by bypassing the defenses
 15 within the mucous ciliary system and entering deep lung tissue. Construction of Alternative 2A
 16 would result in PM_{2.5} concentrations at receptor locations that are below the significance
 17 thresholds established by the BAAQMD. As such, localized particulate matter concentrations at
 18 analyzed receptors would not result in significant human health impacts. No mitigation is required.

19 **Impact AQ-12: Exposure of Sensitive Receptors to Health Hazards from Localized Particulate**
 20 **Matter in Excess of SJVAPCD's Health-Based Concentration Thresholds**

21 **NEPA Effects:** The addition of the operational barrier in SJVAPCD would not generate additional
 22 construction emissions that would substantially affect sensitive receptors, relative to emissions
 23 associated with Alternative 1A. Accordingly, construction activity required for Alternative 2A within
 24 the SJVAPCD was assumed to equal activity required for Alternative 1A. Emissions and associated
 25 health risks from localized exposure to localized PM under Alternative 1A would therefore be
 26 representative of emissions and health risks generated by Alternative 2A.

27 As shown in Table 22-17, with the exception of 24-hour PM₁₀, maximum predicted PM_{2.5} and
 28 PM₁₀ concentrations are less than SJVAPCD's adopted thresholds. Concentrations of PM₁₀ would
 29 exceed SJVAPCD's 24-hour PM₁₀ threshold, even with implementation of environmental
 30 commitments (see Appendix 3B, *Environmental Commitments*). Receptors exposed to PM₁₀
 31 concentrations in excess of SMAQMD's threshold could experience increased risk for adverse human
 32 health effects. Mitigation Measure AQ-9 is available to address this effect.

33 **CEQA Conclusion:** Respirable particulates pose a human health hazard by bypassing the defenses
 34 within the mucous ciliary system and entering deep lung tissue. Construction of Alternative 2A
 35 would result in the short-term exposure of receptors to PM₁₀ concentrations that exceed SJVAPCD
 36 threshold. This would be a significant impact. Mitigation Measure AQ-9 outlines a tiered strategy to
 37 reduce PM₁₀ concentrations and public exposure to a less-than-significant level.

38 **Mitigation Measure AQ-9: Implement Measures to Reduce Re-Entrained Road Dust and**
 39 **Receptor Exposure to PM_{2.5} and PM₁₀**

40 Please see Mitigation Measure AQ-9 under Impact AQ-9 in the discussion of Alternative 1A.

1 **Impact AQ-13: Exposure of Sensitive Receptors to Health Hazards from Localized Carbon**
 2 **Monoxide**

3 **NEPA Effects:** Construction activity required for Alternative 2A would be similar to activity required
 4 for Alternative 1A. Accordingly, the potential for Alternative 2A to result in CO hot-spots during
 5 construction would be the same as Alternative 1A. Given that construction activities typically do not
 6 result in CO hot-spots, onsite concentrations must comply with OSHA standards, and CO levels
 7 dissipate as a function of distance, equipment-generated CO emissions (see Table 22-12) are not
 8 anticipated to result in adverse health hazards to sensitive receptors. Refer to Impact AQ-13 under
 9 Alternative 1A.

10 Traffic associated with construction may contribute to increase roadway congestion, which could
 11 lead to conditions conducive to CO hot-spot formation. As shown in Table 19-8, the highest peak
 12 hour traffic volumes under BPBGPP—12,567 vehicles per hour—would occur on westbound
 13 Interstate 80 between Suisun Valley Road and State Route 12. This is about half of the congested
 14 traffic volume modeled by BAAQMD (24,000 vehicles per hour) that would be needed to contribute
 15 to a localized CO hot-spot, and less than half of the traffic volume modeled by SMAQMD (31,600
 16 vehicles per hour). Accordingly, construction traffic is not anticipated to result in adverse health
 17 hazards to sensitive receptors.

18 **CEQA Conclusion:** Continuous engine exhaust may elevate localized CO concentrations. Receptors
 19 exposed to these CO “hot-spots” may have a greater likelihood of developing adverse health effects.
 20 Construction sites are less likely to result in localized CO hot-spots due to the nature of construction
 21 activities (Sacramento Metropolitan Air Quality Management District 2014), which normally utilize
 22 diesel-powered equipment for intermittent or short durations. Moreover, construction sites must
 23 comply with the OSHA CO exposure standards for onsite workers. Accordingly, given that
 24 construction activities typically do not result in CO hot-spots, onsite concentrations must comply
 25 with OSHA standards, and CO levels dissipate as a function of distance, equipment-generated CO
 26 emissions are not anticipated to result in significant health hazards to sensitive receptors. Similarly,
 27 peak-hour construction traffic on local roadways would not exceed BAAQMD’s or SMAQMD’s
 28 conservative screening criteria for the formation potential CO hot-spots. This impact would be less
 29 than significant. No mitigation is required.

30 **Impact AQ-14: Exposure of Sensitive Receptors to Health Hazards from Diesel Particulate**
 31 **Matter in Excess of SMAQMD’s Chronic Non-Cancer and Cancer Risk Thresholds**

32 **NEPA Effects:** Construction activity required for Alternative 2A within the SMAQMD was assumed to
 33 equal activity required for Alternative 1A. Emissions and associated health risks from localized
 34 exposure to DPM under Alternative 1A would therefore be representative of emissions and health
 35 risks generated by Alternative 2A. As shown in Table 22-14, Alternative 1A would not exceed the
 36 SMAQMD’s thresholds for chronic non-cancer hazard or cancer risk. Therefore, this alternative’s
 37 effect of exposure of sensitive receptors to DPM emissions and their health hazards during
 38 construction would not be adverse.

39 **CEQA Conclusion:** DPM generated during construction poses inhalation-related chronic non-cancer
 40 hazard and cancer risk if adjacent receptors are exposed to significant concentrations for prolonged
 41 durations. The DPM generated during Alternative 2A construction would not exceed the SMAQMD’s
 42 chronic non-cancer hazard or cancer risk threshold. Therefore, this impact would be less than
 43 significant. No mitigation is required.

1 **Impact AQ-15: Exposure of Sensitive Receptors to Health Hazards from Diesel Particulate**
 2 **Matter in Excess of YSAQMD's Chronic Non-Cancer and Cancer Risk Thresholds**

3 **NEPA Effects:** Construction activity required for Alternative 2A within the YSAQMD was assumed to
 4 equal activity required for Alternative 1A. Emissions and associated health risks from localized
 5 exposure to DPM under Alternative 1A would therefore be representative of emissions and health
 6 risks generated by Alternative 2A. As shown in Table 22-19, Alternative 1A would not exceed the
 7 YSAQMD's chronic non-cancer or cancer thresholds and, thus, would not expose sensitive receptors
 8 to substantial pollutant concentrations. Therefore, this alternative's effect of exposure of sensitive
 9 receptors to DPM emissions and their health hazards during construction would not be adverse.

10 **CEQA Conclusion:** DPM generated during construction poses inhalation-related chronic non-cancer
 11 hazard and cancer risk if adjacent receptors are exposed to significant concentrations for prolonged
 12 durations. The DPM generated during Alternative 2A construction would not exceed the YSAQMD's
 13 chronic non-cancer or cancer thresholds, and thus would not expose sensitive receptors to
 14 substantial pollutant concentrations. Therefore, this impact for DPM emissions would be less than
 15 significant. No mitigation is required.

16 **Impact AQ-16: Exposure of Sensitive Receptors to Health Hazards from Diesel Particulate**
 17 **Matter in Excess of BAAQMD's Chronic Non-Cancer and Cancer Risk Thresholds**

18 **NEPA Effects:** Construction activity required for Alternative 2A within the BAAQMD was assumed to
 19 equal activity required for Alternative 1A. Emissions and associated health risks from localized
 20 exposure to DPM under Alternative 1A would therefore be representative of emissions and health
 21 risks generated by Alternative 2A. As shown in Table 22-20, Alternative 1A would not exceed the
 22 BAAQMD's thresholds for chronic non-cancer hazard; however, it would exceed BAAQMD's cancer
 23 risk threshold. Therefore, this alternative's effect of exposure of sensitive receptors to DPM-related
 24 health hazards during construction would be adverse.

25 Mitigation Measure AQ-16 would be available to reduce exposure to substantial cancer risk by
 26 relocating affected receptors. Although Mitigation Measure AQ-16 would reduce the severity of this
 27 effect, the BDCP proponents are not solely responsible for implementation of the measure. If a
 28 landowner chooses not to accept DWR's offer of relocation assistance, an adverse effect in the form
 29 excess cancer risk above air district thresholds would occur. Therefore, this effect would be adverse.
 30 If, however, all landowners accept DWR's offer of relocation assistance, effects would not be
 31 adverse.

32 **CEQA Conclusion:** DPM generated during construction poses inhalation-related chronic non-cancer
 33 hazard and cancer risk if adjacent receptors are exposed to significant concentrations for prolonged
 34 durations. The DPM generated during Alternative 2A construction would not exceed the BAAQMD's
 35 chronic non-cancer hazard threshold; however, it would exceed the BAAQMD's cancer thresholds.
 36 Therefore, this impact would be significant.

37 Mitigation Measure AQ-16 would be available to reduce exposure to substantial cancer risk by
 38 relocating affected receptors. Although Mitigation Measure AQ-16 would reduce the severity of this
 39 effect, the BDCP proponents are not solely responsible for implementation of the measure. If a
 40 landowner chooses not to accept DWR's offer of relocation assistance, a significant impact in the
 41 form excess cancer risk above air district thresholds would occur. Therefore, this effect would be
 42 significant and unavoidable. If, however, all landowners accept DWR's offer of relocation assistance,
 43 the impact would be less than significant.

1 **Mitigation Measure AQ-16: Relocate Sensitive Receptors to Avoid Excess Cancer Risk**

2 Please see Mitigation Measure AQ-16 under Impact AQ-16 in the discussion of Alternative 1A.

3 **Impact AQ-17: Exposure of Sensitive Receptors to Health Hazards from Diesel Particulate**
 4 **Matter in Excess of SJVAPCD's Chronic Non-Cancer and Cancer Risk Thresholds**

5 **NEPA Effects:** The addition of the operational barrier in SJVAPCD would not generate additional
 6 construction emissions that would substantially affect sensitive receptors, relative to emissions
 7 associated with Alternative 1A. Accordingly, construction activity required for Alternative 2A within
 8 the SJVAPCD was assumed to equal activity required for Alternative 1A. Emissions and associated
 9 health risks from localized exposure to DPM under Alternative 1A would therefore be
 10 representative of emissions and health risks generated by Alternative 2A.

11 As shown in Table 22-21, Alternative 2A would not exceed the SJVAPCD's chronic non-cancer or
 12 cancer thresholds and, thus, would not expose sensitive receptors to substantial pollutant
 13 concentrations. Therefore, this alternative's effect of exposure of sensitive receptors to DPM
 14 emissions and their health hazards during construction would not be adverse.

15 **CEQA Conclusion:** DPM generated during construction poses inhalation-related chronic non-cancer
 16 hazard and cancer risk if adjacent receptors are exposed to significant concentrations for prolonged
 17 durations. The DPM generated during Alternative 2A construction would not exceed the SJVAPCD's
 18 chronic non-cancer or cancer thresholds, and thus would not expose sensitive receptors to
 19 substantial pollutant concentrations. Therefore, this impact for DPM emissions would be less than
 20 significant. No mitigation is required.

21 **Impact AQ-18: Exposure of Sensitive Receptors to *Coccidioides immitis* (Valley Fever)**

22 **NEPA Effects:** As discussed under Alternative 1A, earthmoving activities during construction could
 23 release *C. immitis* spores if filaments are present and other soil chemistry and climatic conditions
 24 are conducive to spore development. Receptors adjacent to the construction area may therefore be
 25 exposed to increase risk of inhaling *C. immitis* spores and subsequent development of Valley Fever.
 26 Dust-control measures are the primary defense against infection (United States Geological Survey
 27 2000). Implementation of advanced air-district recommended fugitive dust controls outlined in
 28 Appendix 3B, *Environmental Commitments*, would avoid dusty conditions and reduce the risk of
 29 contracting Valley Fever through routine watering and other controls. Therefore, this alternative's
 30 effect of exposure of sensitive receptors to increased Valley Fever risk during construction would
 31 not be adverse.

32 **CEQA Conclusion:** Construction of the water conveyance facility would involve earthmoving
 33 activities that could release *C. immitis* spores if filaments are present and other soil chemistry and
 34 climatic conditions are conducive to spore development. Receptors adjacent to the construction area
 35 may therefore be exposed to increase risk of inhaling *C. immitis* spores and subsequent development
 36 of Valley Fever. Implementation of air-district recommended fugitive dust controls outlined in
 37 Appendix 3B, *Environmental Commitments*, would avoid dusty conditions and reduce the risk of
 38 contracting Valley Fever through routine watering and other controls. Therefore, this impact would
 39 be less than significant. No mitigation is required.

1 **Impact AQ-19: Creation of Potential Odors Affecting a Substantial Number of People during**
2 **Construction or Operation of the Proposed Water Conveyance Facility**

3 **NEPA Effects:** As discussed under Alternative 1A, odors from construction activities would be
4 localized and generally confined to the immediate area surrounding the construction site. Moreover,
5 odors would be temporary and localized, and they would cease once construction activities have
6 been completed. Thus, it is not anticipated that construction of CM1 would create objectionable
7 odors from construction equipment or asphalt paving.

8 Construction of the water conveyance facility would require removal of subsurface material during
9 tunnel excavation and sediment removal. As discussed under Alternative 1A, geotechnical tests
10 indicate that VOC levels in Plan Area soils are below the method detection limits, indicating that
11 organic decay of exposed RTM and sediment will be relatively low (URS 2014). Moreover, drying
12 and stockpiling of the removed RTM and sediment will occur under aerobic conditions, which will
13 further limit any potential decomposition and associated malodorous products. Accordingly, it is not
14 anticipated that tunnel and sediment excavation would create objectionable odors.

15 Typical facilities known to produce odors include landfills, wastewater treatment plants, food
16 processing facilities, and certain agricultural activities. Alternative 2A would not result in the
17 addition of facilities associated with odors, and as such, long-term operation of the water
18 conveyance facility would not result in objectionable odors.

19 **CEQA Conclusion:** Alternative 2A would not result in the addition of major odor producing facilities.
20 Diesel emissions during construction could generate temporary odors, but these would quickly
21 dissipate and cease once construction is completed. Likewise, potential odors generated during
22 asphalt paving would be addressed through mandatory compliance with air district rules and
23 regulations. While tunnel excavation would unearth substantial quantities of RTM, geotechnical
24 tests indicate that soils in the Plan Area have relatively low organic constituents. Moreover, drying
25 and stockpiling of the removed RTM will occur under aerobic conditions, which will further limit
26 any potential decomposition and associated malodorous products. Accordingly, the impact of
27 exposure of sensitive receptors to potential odors during construction would be less than
28 significant. No mitigation is required.

29 **Impact AQ-20: Generation of Criteria Pollutants in the Excess of Federal *De Minimis***
30 **Thresholds from Construction and Operation and Maintenance of the Proposed Water**
31 **Conveyance Facility**

32 **NEPA Effects:** As discussed above, emissions generated by Alternative 1A within the SFNA and
33 SFBAAB would be representative of emissions generated by Alternative 2A (see Table 22-22). Due
34 to the operable barrier at head of Old River, emissions within the SJVAB would be slightly higher
35 than those quantified for Alternative 1A. To ensure the emissions analysis within the SJVAB
36 accurately evaluates all project components, construction emissions associated with the head of Old
37 River barrier were quantified and added to the emissions estimates for the SJVAB under Alternative
38 1A. The resulting emissions are provided in Table 22-65. Exceedances of the federal *de minimis*
39 thresholds are shown in underlined text.

1 **Table 22-65. Criteria Pollutant Emissions from Construction and Operation of Alternative 2A in**
 2 **Nonattainment and Maintenance the SJVAB (tons/year)**

Year	ROG	NO _x ^a	CO ^b	PM10	PM2.5	SO ₂
2016	0	0	0	2	<1	0
2017	0	0	0	0	0	0
2018	2	7	0	12	2	<1
2019	<u>11</u>	<u>81</u>	0	19	3	<1
2020	<u>20</u>	<u>139</u>	0	36	6	<1
2021	<u>30</u>	<u>217</u>	0	58	9	1
2022	<u>29</u>	<u>189</u>	0	35	6	1
2023	<u>25</u>	<u>154</u>	0	19	4	1
2024	<u>24</u>	<u>140</u>	0	18	4	<1
2025	<u>15</u>	<u>92</u>	0	14	3	<1
2026	6	<u>37</u>	0	3	1	<1
2027	<1	<1	0	1	1	<1
2028	0	0	0	0	0	0
2029	0	0	0	0	0	0
ELT	0.01	0.08	0.14	0.02	0.01	<0.01
LLT	0.01	0.07	0.13	0.02	0.01	<0.01
<i>De Minimis</i>	10	10	100	100	100	100

Notes

^a NO_x emissions in excess of 100 tons per year within federally designated PM10 and PM2.5 nonattainment or maintenance areas trigger a secondary PM10 and PM2.5 precursor threshold. NO_x emissions in excess of this secondary threshold could conflict with the applicable PM10 and PM2.5 SIPs. Accordingly, NO_x offsets pursued for the purposes of general conformity for those years in which NO_x emissions exceed 100 tons must occur within the federally designated PM2.5 nonattainment and PM10 maintenance areas, as applicable.

^b The proposed water conveyance facility is located within a federally designated CO attainment area. Accordingly, CO emissions generated by construction of CM1 are not subject to the General Conformity Rule and are excluded from the emissions summary and general conformity analysis (40 CFR Part 51 and 93, Section III.A). Emissions presented in the table are limited those generated by haul trucks, which would occur in federally designated CO maintenance area.

3

4 **Sacramento Federal Nonattainment Area**

5 As shown in Table 22-23, implementation of Alternative 1A (and thus Alternative 2A), would exceed
 6 the following SFNA federal *de minimis* thresholds:

- 7 ● ROG: 2023–2027
- 8 ● NO_x: 2018–2028
- 9 ● PM10: 2023–2024

10 ROG and NO_x are precursors to ozone and NO_x is a precursor to PM, for which the SFNA is in
 11 nonattainment for the NAAQS. Sacramento County is also a maintenance area for the PM10 NAAQS.
 12 Since project emissions exceed the federal *de minimis* thresholds for ROG, NO_x, and PM10, a general
 13 conformity determination must be made to demonstrate that total direct and indirect emissions of

1 ROG, NO_x, and PM₁₀ would conform to the appropriate SFNA SIP for each year of construction in
2 which the *de minimis* thresholds are exceeded.

3 NO_x is also a precursor to PM and can contribute to PM formation. As discussed above, Sacramento
4 County is currently designated maintenance for the PM₁₀ NAAQS and portions of the SVAB are
5 designated nonattainment for the PM_{2.5} NAAQS. NO_x emissions in excess of 100 tons per year in
6 Sacramento County trigger a secondary PM₁₀ precursor threshold, whereas NO_x emissions in excess
7 of 100 tons per year in the SVAB trigger a secondary PM_{2.5} precursor threshold. Since NO_x
8 emissions can contribute to PM formation, NO_x emissions in excess of these secondary precursor
9 thresholds could conflict with the applicable PM₁₀ and PM_{2.5} SIPs. Accordingly, NO_x offsets pursued
10 for the purposes of general conformity for those years in which NO_x emissions exceed 100 tons must
11 occur within the federally designated PM_{2.5} nonattainment and PM₁₀ maintenance areas of the
12 SVAB.

13 As shown in Table 22-12, NO_x emissions generated by construction activities in SMAQMD
14 (Sacramento County) would exceed 100 tons per year between 2022 and 2027. The project
15 therefore triggers the secondary PM₁₀ precursor threshold, requiring all NO_x offsets for 2022
16 through 2027 to occur within Sacramento County. The project also triggers the secondary PM_{2.5}
17 precursor threshold in 2021, requiring all NO_x offsets for 2021 to occur within the federally
18 designated PM_{2.5} nonattainment area within the SFNA. The nonattainment boundary for PM_{2.5}
19 includes all of Sacramento County and portions of Yolo, El Dorado, Solano, and Placer counties.

20 Given the magnitude of NO_x emissions and the limited geographic scope available for offsets in 2022
21 through 2027 (Sacramento County), neither Mitigation Measures AQ-1a nor 1b could feasibly reduce
22 NO_x emissions to net zero for the purposes of general conformity.³¹ This impact would be adverse.
23 In the event that Alternative 2A is selected as the APA, Reclamation, USFWS, and NMFS would need
24 to demonstrate that conformity is met for NO_x and secondary PM₁₀ formation through a local air
25 quality modeling analysis (i.e., dispersion modeling) or other acceptable methods to ensure project
26 emissions do not cause or contribute to any new violations of the NAAQS or increase the frequency
27 or severity of any existing violations.

28 **Mitigation Measure AQ-1a: Mitigate and Offset Construction-Generated Criteria Pollutant**
29 **Emissions within the SFNA to Net Zero (0) for Emissions in Excess of General Conformity**
30 ***De Minimis* Thresholds (Where Applicable) and to Quantities below Applicable CEQA**
31 **Thresholds for Other Pollutants**

32 Please see Mitigation Measure AQ-1a under Impact AQ-1 in the discussion of Alternative 1A.

³¹ The secondary PM precursor thresholds are triggered through the General Conformity Regulation (40 CFR 93.153 (a)(1)). Accordingly, confinement of the geographic scope for available offsets only applies to the General Conformity determination and does not influence mitigation feasibility for Impacts AQ-1 or AQ-28.

1 **Mitigation Measure AQ-1b: Develop an Alternative or Complementary Offsite Mitigation**
 2 **Program to Mitigate and Offset Construction-Generated Criteria Pollutant Emissions**
 3 **within the SFNA to Net Zero (0) for Emissions in Excess of General Conformity *De Minimis***
 4 **Thresholds (Where Applicable) and to Quantities below Applicable CEQA Thresholds for**
 5 **Other Pollutants**

6 Please see Mitigation Measure AQ-1b under Impact AQ-1 in the discussion of Alternative 1A.

7 ***San Joaquin Valley Air Basin***

8 As shown in Table 22-65, implementation of Alternative 2A would exceed the following SJVAB
 9 federal *de minimis* thresholds:

- 10 • ROG: 2019–2025
- 11 • NO_x: 2019–2026

12 ROG and NO_x are precursors to ozone and NO_x is a precursor to PM, for which the SJVAB is in
 13 nonattainment for the NAAQS. Since project emissions exceed the federal *de minimis* threshold for
 14 ROG and NO_x, a general conformity determination must be made to demonstrate that total direct
 15 and indirect emissions of ROG and NO_x would conform to the appropriate SJVAB SIP for each year of
 16 construction in which the *de minimis* thresholds are exceeded.

17 NO_x is also a precursor to PM and can contribute to PM formation. As discussed above, the SJVAB is
 18 currently designated maintenance for the PM10 NAAQS and nonattainment for the PM2.5 NAAQS.
 19 NO_x emissions in excess of 100 tons per year trigger a secondary PM precursor threshold, and could
 20 conflict with the applicable PM10 and PM2.5 SIPs. As shown in Table 22-65, NO_x emissions
 21 generated by construction activities in the SJVAB would exceed 100 tons per year between 2020 and
 22 2024. NO_x offsets pursued for the purposes of general conformity for those years in which NO_x
 23 emissions exceed 100 tons must occur within the federally designated PM2.5 nonattainment and
 24 PM10 maintenance areas of the SJVAB, which are consistent with the larger nonattainment
 25 boundary for ozone.

26 As shown in Appendix 22E, *General Conformity Determination*, Attachment 22E-1, SJVAPCD confirms
 27 that sufficient emissions reduction credits would be available to fully offset ROG and NO_x emissions
 28 in excess of the federal *de minimis* thresholds zero through implementation of Mitigation Measures
 29 AQ-4a and 4b. Mitigation Measures AQ-4a and 4b will ensure the requirements of the mitigation and
 30 offset program are implemented and conformity requirements for ROG and NO_x are met, should
 31 Alternative 2A be selected as the APA.

32 **Mitigation Measure AQ-4a: Mitigate and Offset Construction-Generated Criteria Pollutant**
 33 **Emissions within SJVAPCD/SJVAB to Net Zero (0) for Emissions in Excess of General**
 34 **Conformity *De Minimis* Thresholds (Where Applicable) and to Quantities below**
 35 **Applicable SJVAPCD CEQA Thresholds for Other Pollutants**

36 Please see Mitigation Measure AQ-4a under Impact AQ-4 in the discussion of Alternative 1A.

1 **Mitigation Measure AQ-4b: Develop an Alternative or Complementary Offsite Mitigation**
 2 **Program to Mitigate and Offset Construction-Generated Criteria Pollutant Emissions**
 3 **within the SJVAPCD/SJVAB to Net Zero (0) for Emissions in Excess of General Conformity**
 4 ***De Minimis* Thresholds (Where Applicable) and to Quantities below Applicable SJVAPCD**
 5 **CEQA Thresholds for Other Pollutants**

6 Please see Mitigation Measure AQ-4b under Impact AQ-4 in the discussion of Alternative 1A.

7 ***San Francisco Bay Area Air Basin***

8 As shown in Table 22-23, implementation of the Alternative 1A (and thus Alternative 2A) would not
 9 exceed any of the SFBAAB federal *de minimis* thresholds. Accordingly, a general conformity
 10 determination is not required as total direct and indirect emissions would conform to the
 11 appropriate SFBAAB SIPs.

12 ***CEQA Conclusion:*** SFNA and SJVAB are classified as nonattainment or maintenance areas with
 13 regard to the ozone and PM10 NAAQS, and the impact of increases in criteria pollutant emissions
 14 above the air basin *de minimis* thresholds could conflict with or obstruct implementation of the
 15 applicable air quality plans. Since construction emissions in the SFNA and SJVAB would exceed the
 16 *de minimis* thresholds for ROG, NO_x, and PM10 (SFNA only), this impact would be significant.

17 Mitigation Measures AQ-4a and AQ-4b would ensure project emissions would not result in an
 18 increase in regional ROG or NO_x in the SJVAB. These measures would therefore ensure total direct
 19 and indirect ROG and NO_x emissions generated by the project would conform to the appropriate
 20 SJVAB SIPs by offsetting the action's emissions in the same or nearby area to net zero. Accordingly,
 21 impacts would be less than significant with mitigation in the SJVAB.

22 Although Mitigation Measures AQ-1a and AQ-1b would reduce NO_x in the SFNA, given the magnitude
 23 of NO_x emissions and the limited geographic scope available for offsets (Sacramento County),
 24 neither measure could feasibly reduce NO_x emissions to net zero for the purposes of general
 25 conformity. This impact would be significant and unavoidable in the SFNA.

26 Emissions generated within the SFBAAB would not exceed the SFBAAB *de minimis* thresholds and
 27 would therefore conform to the appropriate SFBAAB SIPs. No mitigation is required.

28 **Impact AQ-21: Generation of Cumulative Greenhouse Gas Emissions during Construction of**
 29 **the Proposed Water Conveyance Facility**

30 ***NEPA Effects:*** GHG emissions generated by construction of Alternative 2A would be similar to
 31 emissions generated for Alternative 1A (see Table 22-25). However, because Alternative 2A includes
 32 an operable barrier at head of Old River, total emissions associated with Alternative 2A would be
 33 slightly higher than Alternative 1A. Table 22-66 summarizes GHG emissions associated with
 34 Alternative 2A. Emissions with are presented with implementation of environmental commitments
 35 (see Appendix 3B, *Environmental Commitments*) and state mandates to reduce GHG emissions.

36 **Table 22-66. GHG Emissions from Construction of Alternative 2A (metric tons/year)^a**

Year	Equipment and Vehicles (CO ₂ e)	Electricity (CO ₂ e)	Concrete Batching (CO ₂)	Total CO ₂ e
2016	0	0	577	577
2017	0	0	0	0

2018	12,534	649	71,664	84,847
2019	46,452	3,625	11,256	61,334
2020	80,608	17,414	69,945	167,967
2021	120,912	46,364	138,729	306,005
2022	145,494	65,106	210,265	420,866
2023	188,505	57,956	205,289	451,751
2024	209,729	60,453	245,610	515,792
2025	142,041	40,781	164,006	346,828
2026	109,805	14,559	39,302	163,667
2027	84,144	2,781	56,679	143,605
2028	30,837	73	11,151	42,062
2029	1,300	2	0	1,302
<i>Total</i>	<i>1,172,362</i>	<i>309,765</i>	<i>1,224,476</i>	<i>2,706,602</i>

^a Emissions estimates do not account for GHG flux from land disturbance. Surface and subsurface (e.g., tunneling) activities may oxidize peat soils, releasing GHG emissions. However, recent geotechnical surveys indicated that peat is negligible below 80 feet of depth. The tunnel will be placed below this range and the design adjusted if peat soils are discovered. Peat material encountered during surface excavation for non-tunnel work will be covered with top soil to reduce oxidation when needed.

Values may not total correctly due to rounding.

1

2 Table 22-26 summarizes GHG emissions that would be generated in the BAAQMD, SMAQMD, and
3 YSAQMD. The head of Old River barrier would be constructed within the SJVAPCD under Alternative
4 2A. Table 22-67 summarizes GHG emissions that would be generated in the SJVAPCD. The table does
5 not include emissions from electricity generation as these emissions would be generated by power
6 plants located throughout the state (see discussion preceding this impact analysis). GHG emissions
7 presented in Tables 22-26 and 22-67 are therefore provided for information purposes only.

8 **Table 22-67. GHG Emissions from Construction of Alternative 2A by Air District (metric tons/year)^a**

Year	Equipment and Vehicles (CO ₂ e)	Concrete Batching (CO ₂) ^a	Total CO ₂ e ^b
SMAQMD	533,894	734,685	1,268,580
YSAQMD	61,772	0	61,772
SJVAPCD	359,734	244,895	604,629
BAAQMD	216,962	244,895	461,857

^a Emissions assigned to each air district based on the number of batching plants located in that air district.

^b Values may not total correctly due to rounding.

9

10 As shown in Table 22-66, construction of Alternative 2A would generate a total of 2.7 million metric
11 tons of GHG emissions. This is equivalent to adding 569,000 typical passenger vehicles to the road
12 during construction (U.S. Environmental Protection Agency 2014e). As discussed in section 22.3.2,
13 *Determination of Effects*, any increase in emissions above net zero associated with construction of
14 the BDCP water conveyance features would be adverse. Accordingly, this effect would be adverse.
15 Mitigation Measure AQ-21, which would develop a GHG Mitigation Program to reduce construction-
16 related GHG emissions to net zero, is available address this effect.

CEQA Conclusion: Construction of Alternative 2A would generate a total of 2.7 million metric tons of GHG emissions. As discussed in section 22.3.2, *Determination of Effects*, any increase in emissions above net zero associated with construction of the BDCP water conveyance features would be significant. Mitigation Measure AQ-21 would develop a GHG Mitigation Program to reduce construction-related GHG emissions to net zero. Accordingly, this impact would be less-than-significant with implementation of Mitigation Measure AQ-21.

Mitigation Measure AQ-21: Develop and Implement a GHG Mitigation Program to Reduce Construction Related GHG Emissions to Net Zero (0)

Please see Mitigation Measure AQ-21 under Impact AQ-21 in the discussion of Alternative 1A.

Impact AQ-22: Generation of Cumulative Greenhouse Gas Emissions from Operation and Maintenance of the Proposed Water Conveyance Facility and Increased Pumping

NEPA Effects: Operation of Alternative 2A would generate direct and indirect GHG emissions. Sources of direct emissions include heavy-duty equipment, on road crew trucks, and employee vehicle traffic. Indirect emissions would be generated predominantly by electricity consumption required for pumping as well as, maintenance, lighting, and other activities.

Table 22-68 summarizes long-term operational GHG emissions associated with operations, maintenance, and increased SWP pumping. Emissions were quantified for both ELT and LET conditions, although activities would take place annually until project decommissioning. Emissions include state mandates to reduce GHG emissions (described in Impact AQ-21) are presented (there are no BDCP specific operational environmental commitments). Total CO₂e emissions are compared to both the No Action Alternative (NEPA point of comparison) and Existing Conditions (CEQA baseline). As discussed in Section 22.3.1.2, equipment emissions are assumed to be zero under both the No Action Alternative (NEPA point of comparison) and Existing Conditions (CEQA baseline). The equipment emissions presented in Table 22-67 are therefore representative of project impacts for both the NEPA and CEQA analysis.

Table 22-68. GHG Emissions from Operation, Maintenance, and Increased SWP Pumping, Alternative 2A (metric tons/year)

Condition	Equipment CO ₂ e	Electricity CO ₂ e		Total CO ₂ e	
		NEPA Point of Comparison	CEQA Baseline	NEPA Point of Comparison	CEQA Baseline
ELT	562	-	111,643	-	112,205
LLT	548	25,621	4,984	26,169	5,532

Note: The *NEPA point of comparison* compares total CO₂e emissions after implementation of Alternative 2A to the No Action Alternative, whereas the *CEQA baseline* compares total CO₂e emissions to Existing Conditions.

Table 22-27 summarizes equipment CO₂e emissions that would be generated in the BAAQMD, SMAQMD, and YSAQMD. The head of Old River barrier would be constructed within the SJVAPCD under Alternative 2A. Table 22-70 summarizes equipment CO₂e associated with operational activities in SJVAPCD. The table does not include emissions from SWP pumping as these emissions would be generated by power plants located throughout the state (see discussion preceding this

1 impact analysis). GHG emissions presented in Tables 22-27 and 22-69 are therefore provided for
 2 information purposes only.

3 **Table 22-69. Equipment CO₂e Emissions from Operation and Maintenance of Alternative 2A in**
 4 **SJVAPCD (metric tons/year)^a**

Air District	ELT	LLT
SJVAPCD	32	32

^a Emissions do not include emissions generated by increased SWP pumping.

6 **SWP Operational and Maintenance GHG Emissions Analysis**

7 Alternative 2A would add approximately 1,234 GWh³² of additional net electricity demand to
 8 operation of the SWP each year assuming 2060 conditions. Conditions at 2060 (LLT) are used for
 9 this analysis because they yield the largest potential additional net electricity requirements and
 10 therefore represent the largest potential impact. This 1,234 GWh is based on assumptions of future
 11 conditions and operations and includes all additional energy required to operate the project with
 12 BDCP Alternative 2A including any additional energy associated with additional water being moved
 13 through the system.

14 In the CAP, DWR developed estimates of historical, current, and future GHG emissions. Figure 22-9
 15 shows those emissions as they were projected in the CAP and how those emissions projections
 16 would change with the additional electricity demands needed to operate the SWP with the addition
 17 of BDCP Alternative 2A. As shown in Figure 22-9, in 2024, the year BDCP Alternative 2A is projected
 18 to go online, DWR total emissions jump from around 912,000 metric tons of CO₂e to nearly 1.5
 19 million metric tons of CO₂e. This elevated level is approximately 200,000 metric tons of CO₂e above
 20 DWR's designated GHG emissions reduction trajectory (red line, which is the linear interpolation
 21 between DWR's 2020 GHG emissions goal and DWR's 2050 GHG emissions goal.) The projection
 22 indicates that after the initial jump in emissions, existing GHG emissions reduction measures would
 23 bring the elevated GHG emissions level back down below DWR's GHG emissions reduction trajectory
 24 by 2038 and that DWR would still achieve its GHG emission reduction goal by 2050.

25 Because employing only DWR's existing GHG emissions reduction measures would result in a large
 26 initial increase in emissions and result in DWR emissions exceeding the emissions reduction
 27 trajectory for several years, DWR will take additional actions to reduce GHG emissions if BDCP
 28 Alternative 2A is implemented.

29 The CAP sets forth DWR's plan to manage its activities and operations to achieve its GHG emissions
 30 reduction goals. The CAP commits DWR to monitoring its emissions each year and evaluating its
 31 emissions every five years to determine whether it is on a trajectory to achieve its GHG emissions
 32 reduction goals. If it appears that DWR will not meet the GHG emission reduction goals established
 33 in the plan, DWR may make adjustments to existing emissions reduction measures, devise new
 34 measures to ensure achievement of the goals, or take other action. Given the scale of additional

³² Estimated net energy demand differs slightly from what is presented in Chapter 21, *Energy*. This is because the above analysis includes energy needed for transmission and distribution of water along the Valley String, which is required to enable a comparison with the assumptions in DWR's CAP.

emissions that BDCP Alternative 2A would add to DWR's total GHG emissions, DWR has evaluated the most likely method that it would use to compensate for such an increase in GHG emissions: modification of DWR's REPP. The DWR REPP (GHG emissions reduction measure OP-1 in the CAP) describes the amount of additional renewable energy that DWR expects to purchase each year to meet its GHG emissions reduction goals. The REPP lays out a long-term strategy for renewable energy purchases, though actual purchases of renewable energy may not exactly follow the schedule in the REPP and will ultimately be governed by actual operations, measured emissions, and contracting.

Table 22-70 below shows how the REPP could be modified to accommodate BDCP Alternative 2A, and shows that additional renewable energy resources could be purchased during years 2022–2025 over what was programmed in the original REPP. The net result of this change is that by 2026 DWR's energy portfolio would contain nearly 1,300 GWh of renewable energy (in addition to hydropower generated at SWP facilities). This amount is considerably larger than the amount called for in the original DWR REPP (1,292 compared to 792). In later years, 2031–2050, DWR would bring on slightly fewer additional renewable resources than programmed in the original REPP; however, almost 2,200 additional GWh of electricity would be purchased under the modified REPP during the 40 year period 2011–2050 then under the original REPP. Figure 22-10 shows how this modified Renewable Energy Procurement Plan would affect DWR's projected future emissions with BDCP Alternative 2A.

Table 22-70. Changes in Expected Renewable Energy Purchases 2011–2050 (Alternative 2A)

Year(s)	Additional GWh of Renewable Power Purchased (Above previous year)	
	Original CAP	New CAP
2011–2020	36	36
2021	72	72
2022–2025	72	197
2026–2030	72	72
2031–2040	108	58
2041–2050	144	59
Total Cumulative	52,236	54,411

As shown in the analysis above and consistent with the analysis contained in the CAP and associated Initial Study and Negative Declaration for the CAP, BDCP Alternative 2A would not adversely affect DWR's ability to achieve the GHG emissions reduction goals set forth in the CAP. Further, Alternative 2A would not conflict with any of DWR's specific action GHG emissions reduction measures and implements all applicable project level GHG emissions reduction measures as set forth in the CAP. BDCP Alternative 2A is therefore consistent with the analysis performed in the CAP. There would be no adverse effect.

CEQA Conclusion: SWP GHG emissions currently are below 1990 levels and achievement of the goals of the CAP means that total DWR GHG emissions will be reduced to 50% of 1990 levels by 2020 and to 80% of 1990 levels by 2050. The implementation of BDCP Alternative 2A would not affect DWR's established emissions reduction goals or baseline (1990) emissions and therefore would not result in a change in total DWR emissions that would be considered significant. Prior adoption of the CAP by DWR already provides a commitment on the part of DWR to make all

1 necessary modifications to DWR's REPP (as described above) or any other GHG emission reduction
 2 measure in the CAP that are necessary to achieve DWR's GHG emissions reduction goals. Therefore
 3 no amendment to the approved CAP is necessary to ensure the occurrence of the additional GHG
 4 emissions reduction activities needed to account for BDCP-related operational emissions. The effect
 5 of BDCP Alternative 2A with respect to GHG emissions is less than cumulatively considerable and
 6 therefore less than significant. No mitigation is required.

7 **Impact AQ-23: Generation of Cumulative Greenhouse Gas Emissions from Increased CVP**
 8 **Pumping as a Result of Implementation of CM1**

9 **NEPA Effects:** As previously discussed, DWR's CAP cannot be used to evaluate environmental
 10 impacts associated with increased CVP pumping, as emissions associated with CVP are not under
 11 DWR's control and are not included in the CAP. Accordingly, GHG emissions resulting from increased
 12 CVP energy use are evaluated separately from GHG emissions generated as a result of SWP energy
 13 use.

14 Under Alternative 2A, operation of the CVP yields the generation of clean, GHG emissions-free,
 15 hydroelectric energy. This electricity is sold into the California electricity market or directly to
 16 energy users. Analysis of the No Action Alternative indicates that the CVP generates and will
 17 continue to generate all of the electricity needed to operate the CVP system and approximately
 18 3,500 GWh of excess hydroelectric energy that would be sold to energy users throughout California.
 19 Implementation of Alternative 2A, however, would result in an increase of 103 GWh in the demand
 20 for CVP generated electricity, which would result in a reduction of 103 GWh of electricity available
 21 for sale from the CVP to electricity users. This reduction in the supply of GHG emissions-free
 22 electricity to the California electricity users could result in a potential indirect effect of the project,
 23 as these electricity users would have to acquire substitute electricity supplies that may result in GHG
 24 emissions (although additional conservation is also a possible outcome as well).

25 It is unknown what type of power source (e.g., renewable, natural gas) would be substituted for CVP
 26 electricity or if some of the lost power would be made up with higher efficiency. Given State
 27 mandates for renewable energy and incentives for energy efficiency, it is possible that a
 28 considerable amount of this power would be replaced by renewable resources or would cease to be
 29 needed as a result of higher efficiency. However, to ensure a conservative analysis, indirect
 30 emissions were quantified for the entire quantity of electricity (103 GWh) using the current and
 31 future statewide energy mix (adjusted to reflect RPS) (please refer to Appendix 22A, *Air Quality*
 32 *Analysis Methodology*, for additional detail on quantification methods).

33 Substitution of 103 GWh of electricity with a mix of sources similar to the current statewide mix
 34 would result in emissions of 28,851 metric tons of CO₂e; however, under expected future conditions
 35 (after full implementation of the RPS), emissions would be 22,419 metric tons of CO₂e.

36 Use of CVP hydroelectricity to meet increased electricity demand from operation of CVP facilities
 37 associated with Alternative 2A would reduce available CVP hydroelectricity to other California
 38 electricity users. Substitution of the lost electricity with electricity from other sources could
 39 indirectly result in an increase of GHG emissions that is comparable or larger than the level of GHG
 40 emissions that trigger mandatory GHG reporting for major facilities. As a result, these emissions
 41 could contribute to a cumulatively considerable effect and are therefore adverse. However, these
 42 emissions would be caused by dozens of independent electricity users, who had previously bought
 43 CVP power, making decisions about different ways to substitute for the lost power. These decisions
 44 are beyond the control of Reclamation or any of the other BDCP Lead Agencies. Further, monitoring

1 to determine the actual indirect change in emissions as a result of BDCP actions would not be
 2 feasible. In light of the impossibility of predicting where any additional emissions would occur, as
 3 well as Reclamation's lack of regulatory authority over the purchasers of power in the open market,
 4 no workable mitigation is available or feasible.

5 **CEQA Conclusion:** Operation of the CVP is a federal activity beyond the control of any State agency
 6 such as DWR, and the power purchases by private entities or public utilities in the private
 7 marketplace necessitated by a reduction in available CVP-generated hydroelectric power are beyond
 8 the control of the State, just as they are beyond the control of Reclamation. For these reasons, there
 9 are no feasible mitigation measures that could reduce this potentially significant indirect impact,
 10 which is solely attributable to operations of the CVP and not the SWP, to a less than significant level.
 11 This impact is therefore determined to be significant and unavoidable.

12 **Impact AQ-24: Generation of Regional Criteria Pollutants from Implementation of CM2-CM11**

13 **NEPA Effects:** Table 22-29 summarizes potential construction and operational emissions that may
 14 be generated by implementation of CM2-CM11. See the discussion of Impact AQ-24 under
 15 Alternative 1A.

16 Criteria pollutants from restoration and enhancement actions could exceed applicable general
 17 conformity *de minimis* levels and applicable local thresholds. The effect would vary according to the
 18 equipment used in construction of a specific conservation measure, the location, the timing of the
 19 actions called for in the conservation measure, and the air quality conditions at the time of
 20 implementation; these effects would be evaluated and identified in the subsequent project-level
 21 environmental analysis conducted for the CM2-CM11 restoration and enhancement actions. The
 22 effect of increases in emissions during implementation of CM2-CM11 in excess of applicable general
 23 conformity *de minimis* levels and air district regional thresholds (Table 22-8) could violate air basin
 24 SIPs and worsen existing air quality conditions. Mitigation Measure AQ-24 would be available to
 25 reduce this effect, but emissions would still be adverse.

26 **CEQA Conclusion:** Construction and operational emissions associated with the restoration and
 27 enhancement actions would result in a significant impact if the incremental difference, or increase,
 28 relative to Existing Conditions exceeds the applicable local air district thresholds shown in Table 22-
 29 8; these effects are expected to be further evaluated and identified in the subsequent project-level
 30 environmental analysis conducted for the CM2-CM11 restoration and enhancement actions.
 31 Mitigation Measure AQ-24 would be available to reduce this effect, but may not be sufficient to
 32 reduce emissions below applicable air quality management district thresholds (see Table 22-8).
 33 Consequently, this impact would be significant and unavoidable.

34 **Mitigation Measure AQ-24: Develop an Air Quality Mitigation Plan (AQMP) to Ensure Air** 35 **District Regulations and Recommended Mitigation are Incorporated into Future** 36 **Conservation Measures and Associated Project Activities**

37 Please see Mitigation Measure AQ-24 under Impact AQ-24 in the discussion of Alternative 1A.

38 **Impact AQ-25: Exposure of Sensitive Receptors to Health Hazards from Localized Particulate** 39 **Matter, Carbon Monoxide, and Diesel Particulate Matter from Implementation of CM2-CM11**

40 **NEPA Effects:** The potential for Alternative 2A to expose sensitive receptors increased health
 41 hazards from localized PM, CO, and DPM would be similar to Alternative 1A. Activities shown in

1 Table 22-29 with the greatest potential to have short or long-term air quality impacts are also
 2 anticipated to have the greatest potential to expose receptors to substantial pollutant
 3 concentrations. The effect would vary according to the equipment used, the location and timing of
 4 the actions called for in the conservation measure, the meteorological and air quality conditions at
 5 the time of implementation, and the location of receptors relative to the emission source. Potential
 6 health effects would be evaluated and identified in the subsequent project-level environmental
 7 analysis conducted for the CM2–CM11 restoration and enhancement actions.

8 The effect of increases in PM, CO, or DPM (cancer and non-cancer-risk) in excess of applicable air
 9 district thresholds (Table 22-8) at receptor locations could result in adverse health impacts.
 10 Mitigation Measures AQ-24 and AQ-25 would be available to reduce this effect.

11 **CEQA Conclusion:** Construction and operational emissions associated with the restoration and
 12 enhancement actions under Alternative 2A would result in a significant impact if PM, CO, or DPM
 13 (cancer and non-cancer-risk) concentrations at receptor locations exceed the applicable local air
 14 district thresholds shown in Table 22-8; these effects are expected to be further evaluated and
 15 identified in the subsequent project-level environmental analysis conducted for the CM2–CM11
 16 restoration and enhancement actions. Mitigation Measures AQ-24 and AQ-25 would ensure localized
 17 concentrations at receptor locations would be below applicable air quality management district
 18 thresholds (see Table 22-8). Consequently, this impact would be less than significant.

19 **Mitigation Measure AQ-24: Develop an Air Quality Mitigation Plan (AQMP) to Ensure Air**
 20 **District Regulations and Recommended Mitigation are Incorporated into Future**
 21 **Conservation Measures and Associated Project Activities**

22 Please see Mitigation Measure AQ-24 under Impact AQ-24 in the discussion of Alternative 1A.

23 **Mitigation Measure AQ-25: Prepare a Project-Level Health Risk Assessment to Reduce**
 24 **Potential Health Risks from Exposure to Localized DPM and PM Concentrations**

25 Please see Mitigation Measure AQ-25 under Impact AQ-25 in the discussion of Alternative 1A.

26 **Impact AQ-26: Creation of Potential Odors Affecting a Substantial Number of People from**
 27 **Implementation of CM2–CM11**

28 **NEPA Effects:** The potential for Alternative 2A to expose sensitive receptors increased odors would
 29 be similar to Alternative 1A. Accordingly, construction activities associated with CM2–CM11 are not
 30 anticipated to result in nuisance odors. Similarly, while restored land uses associated with the
 31 program have the potential to generate odors from natural processes, the emissions would be
 32 similar in origin and magnitude to the existing land use types in the restored area (e.g., managed
 33 wetlands). Moreover, specific odor effects would be evaluated and identified in the subsequent
 34 project-level environmental analysis conducted for the CM2–CM11 restoration and enhancement
 35 actions. Accordingly, odor-related effects associated with CM2–CM11 would not be adverse.

36 **CEQA Conclusion:** Alternative 2A would not result in the addition of major odor producing facilities.
 37 Diesel emissions during construction could generate temporary odors, but these would quickly
 38 dissipate and cease once construction is completed. Increases in wetland, tidal, and upland habitats
 39 may increase the potential for odors from natural processes. However, the origin and magnitude of
 40 odors would be similar to the existing land use types in the restored area (e.g., managed wetlands).
 41 Moreover, specific odor impacts would be evaluated and identified in the subsequent project-level

1 environmental analysis conducted for the CM2–CM11 restoration and enhancement actions.
 2 Accordingly, the impact of exposure of sensitive receptors to potential odors would be less than
 3 significant. No mitigation is required.

4 **Impact AQ-27: Generation of Cumulative Greenhouse Gas Emissions from Implementation of**
 5 **CM2–CM11**

6 **NEPA Effects:** CM2–CM11 implemented under Alternative 2A would result in local GHG emissions
 7 from construction equipment and vehicle exhaust, similar to Alternative 1A. Restoration activities
 8 with the greatest potential for emissions include those that break ground and require use of
 9 earthmoving equipment. The type of restoration action and related construction equipment use are
 10 shown in Table 22-29. Implementing CM2–CM11 would also affect long-term sequestration rates
 11 through land use changes, such as conversion of agricultural land to wetlands, inundation of peat
 12 soils, drainage of peat soils, and removal or planting of carbon-sequestering plants.

13 Without additional information on site-specific characteristics associated with each of the
 14 restoration components, a complete assessment of GHG flux from CM2–CM11 is currently not
 15 possible. The effect of carbon sequestration and CH₄ generation would vary by land use type, season,
 16 and chemical and biological characteristics; these effects would be evaluated and identified in the
 17 subsequent project-level environmental analysis conducted for the CM2–CM11 restoration and
 18 enhancement actions. Mitigation Measures AQ-18 and AQ-19 would be available to reduce this
 19 effect. However, due to the potential for increases in GHG emissions from construction and land use
 20 change, this effect would be adverse.

21 **CEQA Conclusion:** The restoration and enhancement actions under Alternative 2A could result in a
 22 significant impact if activities are inconsistent with applicable GHG reduction plans, do not
 23 contribute to a lower carbon future, or generate excessive emissions, relative to other projects
 24 throughout the state. These effects are expected to be further evaluated and identified in the
 25 subsequent project-level environmental analysis conducted for the CM2–CM11 restoration and
 26 enhancement actions. Mitigation Measures AQ-24 and AQ-27 would be available to reduce this
 27 impact, but may not be sufficient to reduce to a less-than-significant level. Consequently, this impact
 28 would be significant and unavoidable.

29 **Mitigation Measure AQ-24: Develop an Air Quality Mitigation Plan (AQMP) to Ensure Air**
 30 **District Regulations and Recommended Mitigation are Incorporated into Future**
 31 **Conservation Measures and Associated Project Activities**

32 Please see Mitigation Measure AQ-24 under Impact AQ-24 in the discussion of Alternative 1A.

33 **Mitigation Measure AQ-27: Prepare a Land Use Sequestration Analysis to Quantify and**
 34 **Mitigate (as Needed) GHG Flux Associated with Conservation Measures and Associated**
 35 **Project Activities**

36 Please see Mitigation Measure AQ-27 under Impact AQ-27 in the discussion of Alternative 1A.

37 **22.3.3.6 Alternative 2B—Dual Conveyance with East Alignment and Five**
 38 **Intakes (15,000 cfs; Operational Scenario B)**

39 A total of five intakes would be constructed under Alternative 2B. For the purposes of this analysis,
 40 it was assumed that Intakes 1–5 or Intakes 1–3 and 6–7 would be constructed under Alternative 2B.

1 Under this alternative, an intermediate pumping plant would be constructed; the water conveyance
 2 facility would be a canal, and an operable barrier would be installed (Figures 3-4 and 3-5 in Chapter
 3 3, *Description of Alternatives*).

4 Construction and operation of Alternative 2B would require the use of electricity, which would be
 5 supplied by the California electrical grid. Power plants located throughout the state supply the grid
 6 with power, which will be distributed to the Study area to meet project demand. Power supplied by
 7 statewide power plants will generate criteria pollutants. Because these power plants are located
 8 throughout the state, criteria pollutant emissions associated with Alternative 2B electricity demand
 9 cannot be ascribed to a specific air basin or air district within the Study area. Criteria pollutant
 10 emissions from electricity consumption are therefore provided for informational purposes only and
 11 are not included in the impact conclusion.

12 Electricity demand for construction of Alternative 2B would be to equal demand required for
 13 Alternative 1B. Electricity emissions generated by Alternative 1B would therefore be representative
 14 of emissions generated by Alternative 2B. Refer to Table 22-31 for a summary of electricity-related
 15 criteria pollutants during construction (years 2016 through 2029) of Alternative 1B that are
 16 applicable to this alternative. Operational emissions would be different from Alternative 1B and are
 17 provided in Table 22-71.

18 **Table 22-71. Criteria Pollutant Emissions from Electricity Consumption: Net Project Operations,**
 19 **Alternative 2B (tons/year)^{a,b}**

Year	Analysis	ROG	CO	NO _x	PM10	PM2.5 ^c	SO ₂
ELT	CEQA	1	7	89	8	8	38
LLT	NEPA	1	13	178	15	15	75
LLT	CEQA	0	1	12	1	1	5

NEPA = Compares criteria pollutant emissions after implementation of Alternative 2B to the No Action Alternative.

CEQA = Compares criteria pollutant emissions after implementation of Alternative 2B to Existing Conditions.

^a Emissions assume implementation of RPS (see Appendix 22A, *Air Quality Analysis Methodology*). Power plants that generate electricity for the proposed project would be subject to local air district permitting requirements, including standards to implement BACT to reduce criteria pollutant emissions.

^b Because GHG emissions are cumulative (see Section 22.3.2.1) and not evaluated at the local air basin or air district level, they are discussed in Impacts AQ-21 and AQ-22. The GHG analysis for SWP power utilizes actual and forecasted GHG emissions rates for the SWP system, which differs slightly from the above analysis. Statewide grid average emission factors were utilized for the above analysis as criteria pollutant emission factors for SWP were unavailable. Please also note that the above analysis does not account for additional renewable energy that will be procured through modifications to DWR's REPP (see Impact AQ-22). Accordingly, the emissions results presented above represent a conservative assessment of potential criteria pollutant emissions.

^c Emission factors for PM2.5 are currently unavailable. Consequently, PM2.5 emissions were assumed to equal PM10 emissions. Because PM2.5 represents a fraction of PM10, this approach represents a conservative assessment of PM2.5 emissions from electricity consumption.

20
 21 Alternative 2B would comprise physical/structural components similar to those under Alternative
 22 1B, but would entail an operable barrier along the San Joaquin separate fish movement corridor at
 23 the upstream confluence of Old River and the San Joaquin River (head of Old River). Emissions

generated by construction of all features other than the head of Old River barrier under Alternative 1B would be representative of emissions generated by Alternative 2B (refer to Table 22-30).

The head of Old River barrier would be constructed within the SJVAPCD between 2022 and 2024. To ensure the emissions analysis within the SJVAPCD accurately evaluates all project components, construction emissions associated with the head of Old River barrier were quantified and added to the emissions estimates for the SJVAPCD under Alternative 1B. The resulting emissions are provided in Table 22-72. Exceedances of the air district thresholds are shown in underlined text.

Table 22-72. Criteria Pollutant Emissions from Construction of Alternative 2B within the SJVAPCD (tons/year)

Year	ROG	NO _x	CO	PM10			PM2.5			SO ₂
				Exhaust	Dust	Total	Exhaust	Dust	Total	
2016	0	0	0	0	2	2	0	<1	<1	0
2017	0	0	0	0	0	0	0	0	0	0
2018	13	<u>74</u>	107	2	49	<u>51</u>	2	7	8	<1
2019	<u>46</u>	<u>327</u>	313	6	112	<u>118</u>	5	17	<u>23</u>	1
2020	<u>30</u>	<u>256</u>	174	5	49	<u>54</u>	5	8	13	1
2021	<u>33</u>	<u>273</u>	186	5	54	<u>59</u>	5	9	14	1
2022	<u>22</u>	<u>169</u>	123	3	39	<u>42</u>	3	6	9	<1
2023	13	<u>88</u>	92	1	32	<u>33</u>	1	5	6	<1
2024	11	<u>75</u>	76	1	26	<u>27</u>	1	4	5	<1
2025	1	5	5	<1	8	8	<1	1	1	<1
2026	<1	2	2	<1	3	3	<1	<1	0	<1
2027	<1	<1	1	<1	3	3	<1	<1	1	<1
2028	0	0	0	0	2	2	0	<1	<1	0
2029	0	0	0	0	0	0	0	0	0	0
Thresholds	10	10	-	-	-	15	-	-	15	-

Daily operation and maintenance activities under Alternative 2B would be the same as those generated under Alternative 1B (see Table 22-32). Yearly maintenance would be similar to those under Alternative 1B, but would also include annual inspections and sediment removal at the operable barrier in San Joaquin County. Table 22-73 summarizes annual criteria pollutant emissions associated with operation of Alternative 2B in the SJVAPCD.

Table 22-73. Criteria Pollutant Emissions from Operation of Alternative 2B in SJVAPCD (pounds per day and tons per year)

Condition	San Joaquin Valley Air Pollution Control District					
	ROG	NO _x	CO	PM10	PM2.5	SO ₂
ELT	<0.01	0.01	0.02	<0.01	<0.01	<0.01
LLT	<0.01	0.01	0.01	<0.01	<0.01	<0.01
Thresholds	10	10	-	15	15	-

1 **Impact AQ-1: Generation of Criteria Pollutants in Excess of the SMAQMD Regional Thresholds**
 2 **during Construction of the Proposed Water Conveyance Facility**

3 **NEPA Effects:** Construction activity required for Alternative 2B within the SMAQMD was assumed to
 4 equal activity required for Alternative 1B. Emissions generated by Alternative 1B would therefore
 5 be representative of emissions generated by Alternative 2B. As shown in Table 22-30, emissions
 6 would exceed SMAQMD's daily NO_x threshold, even with implementation of environmental
 7 commitments (see Appendix 3B, *Environmental Commitments*). Since NO_x is a precursor to ozone
 8 and PM, exceedances of SMAQMD's daily NO_x threshold could impact both regional ozone and PM
 9 formation, which could worsen regional air quality and air basin attainment of the NAAQS and
 10 CAAQS.

11 While equipment could operate at any work area identified for this alternative, the highest level of
 12 NO_x and fugitive dust emissions in the SMAQMD are expected to occur at those sites where the
 13 duration and intensity of construction activities would be greatest. This includes all intake and
 14 intake pumping plant sites along the east bank of the Sacramento River. See the discussion of Impact
 15 AQ-1 under Alternative 1B.

16 Environmental commitments will reduce construction-related emissions; however, as shown in
 17 Table 22-31, NO_x emissions would still exceed SMAQMD's threshold identified in Table 22-8 and
 18 result in a regional adverse effect to air quality. Mitigation Measures AQ-1a and AQ-1b would be
 19 available to reduce NO_x emissions, and would thus address regional effects related to secondary
 20 ozone and PM formation.

21 **CEQA Conclusion:** NO_x emissions generated during construction would exceed SMAQMD threshold
 22 identified in Table 22-8. Since NO_x is a precursor to ozone and PM, exceedances of SMAQMD's daily
 23 NO_x threshold could impact both regional ozone and PM formation. SMAQMD's regional emissions
 24 thresholds (Table 22-8) have been adopted to ensure projects do not hinder attainment of the
 25 CAAQS or NAAQS. The impact of generating NO_x emissions in excess of local air district thresholds
 26 would therefore violate applicable air quality standards in the Study area and could contribute to or
 27 worsen an existing air quality conditions. This impact would therefore be significant. Mitigation
 28 Measures AQ-1a and AQ-1b would be available to reduce NO_x emissions to a less-than-significant
 29 level by offsetting emissions to quantities below SMAQMD CEQA thresholds (see Table 22-8).

30 **Mitigation Measure AQ-1a: Mitigate and Offset Construction-Generated Criteria Pollutant**
 31 **Emissions within the SFNA to Net Zero (0) for Emissions in Excess of General Conformity**
 32 **De Minimis Thresholds (Where Applicable) and to Quantities below Applicable CEQA**
 33 **Thresholds for Other Pollutants**

34 Please see Mitigation Measure AQ-1a under Impact AQ-1 in the discussion of Alternative 1A.

35 **Mitigation Measure AQ-1b: Develop an Alternative or Complementary Offsite Mitigation**
 36 **Program to Mitigate and Offset Construction-Generated Criteria Pollutant Emissions**
 37 **within the SFNA to Net Zero (0) for Emissions in Excess of General Conformity De Minimis**
 38 **Thresholds (Where Applicable) and to Quantities below Applicable CEQA Thresholds for**
 39 **Other Pollutants**

40 Please see Mitigation Measure AQ-1b under Impact AQ-1 in the discussion of Alternative 1A.

1 **Impact AQ-2: Generation of Criteria Pollutants in Excess of the YSAQMD Regional Thresholds**
 2 **during Construction of the Proposed Water Conveyance Facility**

3 **NEPA Effects:** Construction activity required for Alternative 2B within the YSAQMD was assumed to
 4 equal activity required for Alternative 1B. Emissions generated by Alternative 1B would therefore
 5 be representative of emissions generated by Alternative 2B. As shown in Table 22-30, emissions
 6 would exceed YSAQMD's NO_x and PM10 thresholds, even with implementation of environmental
 7 commitments (see Appendix 3B, *Environmental Commitments*).

8 Since NO_x is a precursor to ozone and PM, exceedances of SMAQMD's daily NO_x threshold could
 9 impact both regional ozone and PM formation, which could worsen regional air quality and air basin
 10 attainment of the NAAQS and CAAQS. Similarly, exceedances of YSAQMD's PM10 threshold could
 11 impede attainment of the NAAQS and CAAQS for PM10. All emissions generated within YSAQMD are
 12 a result of haul truck movement for equipment and material delivery.

13 Environmental commitments outlined in Appendix 3B, *Environmental Commitments*, will reduce
 14 construction-related emissions; however, as shown in Table 22-30, NO_x and PM10 emissions would
 15 still exceed the applicable YSAQMD thresholds identified in Table 22-8 and result in an adverse
 16 regional effect to air quality. Mitigation Measures AQ-1a and AQ-1b are available to reduce NO_x and
 17 PM10 emissions, and would thus address regional effects related to secondary ozone and PM
 18 formation.

19 **CEQA Conclusion:** Emissions of NO_x and PM10 generated during construction would exceed
 20 YSAQMD's regional thresholds identified in Table 22-8. Since NO_x is a precursor to ozone and NO_x is
 21 a precursor to PM, exceedances of YSAQMD's NO_x threshold could impact both regional ozone and
 22 PM formation, which could worsen regional air quality and air basin attainment of the NAAQS and
 23 CAAQS. Similarly, exceedances of YSAQMD's PM10 threshold could impede attainment of the NAAQS
 24 and CAAQS for PM10. YSAQMD's regional emissions thresholds (Table 22-8) have been adopted to
 25 ensure projects do not hinder attainment of the CAAQS or NAAQS. The impact of generating NO_x and
 26 PM10 in excess of local air district regional thresholds would therefore violate applicable air quality
 27 standards in the study area and could contribute to or worsen an existing air quality conditions. This
 28 would be a significant impact. Mitigation Measures AQ-1a and AQ-1b would be available to reduce
 29 NO_x and PM10 emissions to a less-than-significant level by offsetting emissions to quantities below
 30 YSAQMD CEQA thresholds (see Table 22-8).

31 **Mitigation Measure AQ-1a: Mitigate and Offset Construction-Generated Criteria Pollutant**
 32 **Emissions within the SFNA to Net Zero (0) for Emissions in Excess of General Conformity**
 33 ***De Minimis* Thresholds (Where Applicable) and to Quantities below Applicable CEQA**
 34 **Thresholds for Other Pollutants**

35 Please see Mitigation Measure AQ-1a under Impact AQ-1 in the discussion of Alternative 1A.

36 **Mitigation Measure AQ-1b: Develop an Alternative or Complementary Offsite Mitigation**
 37 **Program to Mitigate and Offset Construction-Generated Criteria Pollutant Emissions**
 38 **within the SFNA to Net Zero (0) for Emissions in Excess of General Conformity *De Minimis***
 39 **Thresholds (Where Applicable) and to Quantities below Applicable CEQA Thresholds for**
 40 **Other Pollutants**

41 Please see Mitigation Measure AQ-1b under Impact AQ-1 in the discussion of Alternative 1A.

1 **Impact AQ-3: Generation of Criteria Pollutants in Excess of the BAAQMD Regional Thresholds**
 2 **during Construction of the Proposed Water Conveyance Facility**

3 **NEPA Effects:** Construction activity required for Alternative 2B within the BAAQMD was assumed to
 4 equal activity required for Alternative 1B. Emissions generated by Alternative 1B would therefore
 5 be representative of emissions generated by Alternative 2B. As shown in Table 22-30, emissions
 6 would exceed BAAQMD's daily ROG and NO_x thresholds, even after implementation of
 7 environmental commitments. All other pollutants would be below air district thresholds and
 8 therefore would not result in an adverse air quality effect.

9 Since ROG and NO_x are precursors to ozone and NO_x is a precursor to PM, exceedances of BAAQMD's
 10 ROG and NO_x thresholds could impact both regional ozone and PM formation, which could worsen
 11 regional air quality and air basin attainment of the NAAQS and CAAQS.

12 While equipment could operate at any work area identified for this alternative, the highest level of
 13 ROG and NO_x emissions in the BAAQMD is expected to occur at those sites where the duration and
 14 intensity of construction activities would be greatest, including the site of the Byron Tract Forebay
 15 adjacent to and south of Clifton Court Forebay. See the discussion of Impact AQ-3 under Alternative
 16 1B.

17 Environmental commitments outlined in Appendix 3B, *Environmental Commitments*, will reduce
 18 construction-related emissions; however, as shown in Table 22-30, ROG and NO_x emissions would
 19 still exceed the applicable air district thresholds identified in Table 22-8 and result in a regional
 20 adverse effect to air quality. Mitigation Measures AQ-3a and AQ-3b are available to reduce ROG and
 21 NO_x emissions, and would thus address regional effects related to secondary ozone and PM
 22 formation.

23 **CEQA Conclusion:** Emissions of ROG and NO_x precursors generated during construction would
 24 exceed BAAQMD regional thresholds identified in Table 22-8. Since ROG and NO_x are precursors to
 25 ozone and NO_x is a precursor to PM, exceedances of BAAQMD's ROG and NO_x thresholds could
 26 impact both regional ozone and PM formation. The BAAQMD's regional emissions thresholds (Table
 27 22-8) have been adopted to ensure projects do not hinder attainment of the CAAQS or NAAQS. The
 28 impact of generating ROG and NO_x emissions in excess of BAAQMD's regional thresholds would
 29 therefore violate applicable air quality standards in the Study area and could contribute to or
 30 worsen an existing air quality conditions. This would be a significant impact. Mitigation Measures
 31 AQ-3a and AQ-3b would be available to reduce NO_x emissions to a less-than-significant level.

32 **Mitigation Measure AQ-3a: Mitigate and Offset Construction-Generated Criteria Pollutant**
 33 **Emissions within BAAQMD/SFBAAB to Net Zero (0) for Emissions in Excess of General**
 34 **Conformity *De Minimis* Thresholds (Where Applicable) and to Quantities below**
 35 **Applicable BAAQMD CEQA Thresholds for Other Pollutants**

36 Please see Mitigation Measure AQ-3a under Impact AQ-3 in the discussion of Alternative 1A.

37 **Mitigation Measure AQ-3b: Develop an Alternative or Complementary Offsite Mitigation**
 38 **Program to Mitigate and Offset Construction-Generated Criteria Pollutant Emissions**
 39 **within the BAAQMD/SFBAAB to Net Zero (0) for Emissions in Excess of General**
 40 **Conformity *De Minimis* Thresholds (Where Applicable) and to Quantities below**
 41 **Applicable BAAQMD CEQA Thresholds for Other Pollutants**

42 Please see Mitigation Measure AQ-3b under Impact AQ-3 in the discussion of Alternative 1A.

1 **Impact AQ-4: Generation of Criteria Pollutants in Excess of the SJVAPCD Regional Thresholds**
 2 **during Construction of the Proposed Water Conveyance Facility**

3 **NEPA Effects:** As shown in Table 22-72, emissions would exceed SJVAPCD's annual thresholds for
 4 the following years and pollutants, even with implementation of environmental commitments. All
 5 other pollutants would be below air district thresholds and therefore would not result in an adverse
 6 air quality effect.

- 7 • ROG: 2019–2022
- 8 • NO_x: 2018–2024
- 9 • PM10: 2018–2024
- 10 • PM2.5: 2019

11 Since ROG and NO_x are precursors to ozone and NO_x is a precursor to PM, exceedances of SJVAPCD's
 12 ROG and NO_x thresholds could impact both regional ozone and PM formation, which could worsen
 13 regional air quality and air basin attainment of the NAAQS and CAAQS. Similarly, exceedances of
 14 SJVAPCD's PM10 and PM2.5 thresholds could impede attainment of the NAAQS and CAAQS for PM.

15 While equipment could operate at any work area identified for this alternative, the highest level of
 16 ROG, NO_x, and PM emissions in the SJVAPCD are expected to occur at those sites where the duration
 17 and intensity of construction activities would be greatest. This includes all temporary and
 18 permanent utility sites, as well as the intermediate pumping plant and all construction sites along
 19 the east conveyance alignment. PM10 emissions would be highest in the vicinity of the concrete
 20 batch plants. For a map of the proposed east alignment, see Mapbook Figure M3-2.

21 Environmental commitments outlined in Appendix 3B, *Environmental Commitments*, will reduce
 22 construction-related emissions; however, as shown in Table 22-72, ROG, NO_x, PM10, and PM2.5
 23 emissions would still exceed SJVAPCD's regional thresholds identified in Table 22-8 and result in an
 24 adverse effect to air quality. Mitigation Measures AQ-4a and AQ-4b are available to reduce ROG, NO_x,
 25 PM10, and PM2.5 emissions, and would thus address regional effects related to secondary ozone and
 26 PM formation.

27 **CEQA Conclusion:** Emissions of ROG, NO_x, PM10, and PM2.5 generated during construction would
 28 exceed SJVAPCD's regional significance threshold identified in Table 22-8. Since ROG and NO_x are
 29 precursors to ozone and NO_x is a precursor to PM, exceedances of SJVAPCD's ROG and NO_x
 30 thresholds could impact both regional ozone and PM formation, which could worsen regional air
 31 quality and air basin attainment of the NAAQS and CAAQS. Similarly, exceedances of SJVAPCD's
 32 PM10 and PM2.5 thresholds could impede attainment of the NAAQS and CAAQS for PM10. The
 33 SJVAPCD's emissions thresholds (Table 22-8) have been adopted to ensure projects do not hinder
 34 attainment of the CAAQS or NAAQS. The impact of generating ROG, NO_x, PM10, and PM2.5 in excess
 35 of local air district thresholds would therefore violate applicable air quality standards in the Study
 36 area and could contribute to or worsen an existing air quality conditions. This would be a significant
 37 impact. Mitigation Measures AQ-4a and AQ-4b would be available to reduce emissions to a less-
 38 than-significant level.

1 **Mitigation Measure AQ-4a: Mitigate and Offset Construction-Generated Criteria Pollutant**
 2 **Emissions within SJVAPCD/SJVAB to Net Zero (0) for Emissions in Excess of General**
 3 **Conformity *De Minimis* Thresholds (Where Applicable) and to Quantities below**
 4 **Applicable SJVAPCD CEQA Thresholds for Other Pollutants**

5 Please see Mitigation Measure AQ-4a under Impact AQ-4 in the discussion of Alternative 1A.

6 **Mitigation Measure AQ-4b: Develop an Alternative or Complementary Offsite Mitigation**
 7 **Program to Mitigate and Offset Construction-Generated Criteria Pollutant Emissions**
 8 **within the SJVAPCD/SJVAB to Net Zero (0) for Emissions in Excess of General Conformity**
 9 ***De Minimis* Thresholds (Where Applicable) and to Quantities below Applicable SJVAPCD**
 10 **CEQA Thresholds for Other Pollutants**

11 Please see Mitigation Measure AQ-4b under Impact AQ-4 in the discussion of Alternative 1A.

12 **Impact AQ-5: Generation of Criteria Pollutants in Excess of the SMAQMD Regional Thresholds**
 13 **from Operation and Maintenance of the Proposed Water Conveyance Facility**

14 **NEPA Effects:** Operations and maintenance activities in SMAQMD required for Alternative 2B were
 15 assumed to equal activities required for Alternative 1B. Emissions generated by Alternative 1B
 16 would therefore be representative of emissions generated by Alternative 2B. As shown in Table 22-
 17 32, emissions would not exceed SMAQMD's regional thresholds of significance and there would be
 18 no adverse effect. See the discussion of Impact AQ-6 under Alternative 1B.

19 **CEQA Conclusion:** Emissions generated during operation and maintenance activities would not
 20 exceed SMAQMD thresholds for criteria pollutants. SMAQMD's regional emissions thresholds (Table
 21 22-8) have been adopted to ensure projects do not hinder attainment of the CAAQS or NAAQS. The
 22 impact of generating emissions in excess of local air district would therefore violate applicable air
 23 quality standards in the Study area and could contribute to or worsen an existing air quality
 24 conditions. Because project operations would not exceed SMAQMD regional thresholds, the impact
 25 would be less than significant. No mitigation is required.

26 **Impact AQ-6: Generation of Criteria Pollutants in Excess of the YSAQMD Regional Thresholds**
 27 **from Operation and Maintenance of the Proposed Water Conveyance Facility**

28 **NEPA Effects:** Construction of Alternative 2B would occur in the SMAQMD, SJVAPCD, and BAAQMD.
 29 No construction emissions would be generated in the YSAQMD. Consequently, construction of
 30 Alternative 2B would neither exceed the YSAQMD thresholds of significance nor result in an adverse
 31 effect to air quality.

32 **CEQA Conclusion:** Construction emissions generated by the alternative would not exceed YSAQMD's
 33 thresholds of significance. This impact would be less than significant. No mitigation is required.

34 **Impact AQ-7: Generation of Criteria Pollutants in Excess of the BAAQMD Regional Thresholds**
 35 **from Operation and Maintenance of the Proposed Water Conveyance Facility**

36 **NEPA Effects:** Operations and maintenance activities in BAAQMD required for Alternative 2B were
 37 assumed to equal activities required for Alternative 1B. Emissions generated by Alternative 1B
 38 would therefore be representative of emissions generated by Alternative 2B. As shown in Table 22-
 39 32, emissions would not exceed BAAQMD's regional thresholds of significance and there would be
 40 no adverse effect. See the discussion of Impact AQ-7 under Alternative 1B.

1 **CEQA Conclusion:** Emissions generated during operation and maintenance activities would not
 2 exceed BAAQMD regional thresholds for criteria pollutants. BAAQMD's regional emissions
 3 thresholds (Table 22-8) have been adopted to ensure projects do not hinder attainment of the
 4 CAAQS or NAAQS. The impact of generating emissions in excess of local air district thresholds would
 5 violate applicable air quality standards in the Study area and could contribute to or worsen an
 6 existing air quality conditions. Because project operations would not exceed BAAQMD regional
 7 thresholds, the impact would be less than significant. No mitigation is required.

8 **Impact AQ-8: Generation of Criteria Pollutants in Excess of the SJVAPCD Thresholds from**
 9 **Operation and Maintenance of the Proposed Water Conveyance Facility**

10 **NEPA Effects:** Operations and maintenance in SJVAPCD include annual inspections and sediment
 11 removal (see Appendix 22A, *Air Quality Analysis Methodology*, for additional detail). The highest
 12 concentration of operational emissions in the SJVAPCD is expected at routine inspection sites along
 13 the east canal alignment and at the operable barrier. As shown in Table 22-72, operation and
 14 maintenance activities under Alternative 2B would not exceed SJVAPCD's regional thresholds of
 15 significance (see Table 22-8). Accordingly, project operations would not contribute to or worsen
 16 existing air quality exceedances. There would be no adverse effect.

17 **CEQA Conclusion:** Emissions generated during operation and maintenance activities would not
 18 exceed SJVAPCD's regional thresholds of significance. SJVAPCD's regional emissions thresholds
 19 (Table 22-8) have been adopted to ensure projects do not hinder attainment of the CAAQS or
 20 NAAQS. The impact of generating emissions in excess of local air district thresholds would violate
 21 applicable air quality standards in the Study area and could contribute to or worsen an existing air
 22 quality conditions. Because project operations would not exceed SJVAPCD regional thresholds, the
 23 impact would be less than significant. No mitigation is required.

24 **Impact AQ-9: Exposure of Sensitive Receptors to Health Hazards from Localized Particulate**
 25 **Matter in Excess of SMAQMD's Health-Based Concentration Thresholds**

26 **NEPA Effects:** Construction activity required for Alternative 2B within the SMAQMD was assumed to
 27 equal activity required for Alternative 1B. Emissions and associated health risks from exposure to
 28 localized PM under Alternative 1B would therefore be representative of emissions and health risks
 29 generated by Alternative 2B.

30 As shown in Table 22-33, concentrations of annual PM10 and PM2.5 would be below the SMAQMD's
 31 significance thresholds. However, concentrations of PM10 would exceed SMAQMD's 24-hour PM10
 32 threshold near intakes and intake work areas, even with implementation of environmental
 33 commitments (see Appendix 3B, *Environmental Commitments*). Receptors exposed to PM10
 34 concentrations in excess of SMAQMD's threshold could experience increased risk for adverse human
 35 health effects. Mitigation Measure AQ-9 is available to address this effect.

36 **CEQA Conclusion:** Respirable particulates pose a human health hazard by bypassing the defenses
 37 within the mucous ciliary system and entering deep lung tissue. Construction of Alternative 2B
 38 would result in the short-term exposure of receptors to PM10 concentrations that exceed SMAQMD
 39 threshold. This would be a significant impact. Mitigation Measure AQ-9 outlines a tiered strategy to
 40 reduce PM10 concentrations and public exposure to a less-than-significant level.

1 **Mitigation Measure AQ-9: Implement Measures to Reduce Re-Entrained Road Dust and**
 2 **Receptor Exposure to PM2.5 and PM10**

3 Please see Mitigation Measure AQ-9 under Impact AQ-9 in the discussion of Alternative 1A

4 **Impact AQ-10: Exposure of Sensitive Receptors to Health Hazards from Localized Particulate**
 5 **Matter in Excess of YSAQMD's Health-Based Concentration Thresholds**

6 **NEPA Effects:** Construction activity required for Alternative 2B within the YSAQMD was assumed to
 7 equal activity required for Alternative 1B. Emissions and associated health risks from exposure to
 8 localized PM under Alternative 1B would therefore be representative of emissions and health risks
 9 generated by Alternative 2B. As shown previously in Table 22-34, concentrations of particulate
 10 matter would not exceed YSAQMD's 24-hour and annual PM10 and PM2.5 thresholds and
 11 consequently would not result in an adverse effect to human health.

12 **CEQA Conclusion:** Respirable particulates pose a human health hazard by bypassing the defenses
 13 within the mucous ciliary system and entering deep lung tissue. Construction of Alternative 2B
 14 would result in PM2.5 and PM10 concentrations at receptor locations that are below the significance
 15 thresholds established by the YSAQMD. As such, localized particulate matter concentrations at
 16 analyzed receptors would not result in significant human health impacts. No mitigation is required.

17 **Impact AQ-11: Exposure of Sensitive Receptors to Health Hazards from Localized Particulate**
 18 **Matter in Excess of BAAQMD's Health-Based Concentration Thresholds**

19 **NEPA Effects:** Construction activity required for Alternative 2B within the BAAQMD was assumed to
 20 equal activity required for Alternative 1B. Emissions and associated health risks from exposure to
 21 localized PM under Alternative 1B would therefore be representative of emissions and health risks
 22 generated by Alternative 2B. As shown in Table 22-35, concentrations of particulate matter would
 23 not exceed BAAQMD's annual PM2.5 threshold and consequently would not result in an adverse
 24 effect to human health.

25 **CEQA Conclusion:** Respirable particulates pose a human health hazard by bypassing the defenses
 26 within the mucous ciliary system and entering deep lung tissue. Construction of Alternative 2B
 27 would result in PM2.5 concentrations at receptor locations that are below the significance
 28 thresholds established by the BAAQMD. As such, localized particulate matter concentrations at
 29 analyzed receptors would not result in significant human health impacts. No mitigation is required.

30 **Impact AQ-12: Exposure of Sensitive Receptors to Health Hazards from Localized Particulate**
 31 **Matter in Excess of SJVAPCD's Health-Based Concentration Thresholds**

32 **NEPA Effects:** The addition of the operational barrier in SJVAPCD would not generate additional
 33 construction emissions that would substantially affect sensitive receptors, relative to emissions
 34 associated with Alternative 1B. Accordingly, construction activity required for Alternative 2B within
 35 the SJVAPCD was assumed to equal activity required for Alternative 1B. Emissions and associated
 36 health risks from exposure to localized PM under Alternative 1B would therefore be representative
 37 of emissions and health risks generated by Alternative 2B.

38 As shown in Table 22-36, concentrations of PM10 and PM2.5 would exceed SJVAPCD's 24-hour
 39 thresholds, even with implementation of environmental commitments (see Appendix 3B,
 40 *Environmental Commitments*). Receptors exposed to PM10 and PM2.5 concentrations in excess of

1 SMAQMD's threshold could experience increased risk for adverse human health effects. Mitigation
2 Measure AQ-9 is available to address this effect.

3 **CEQA Conclusion:** Respirable particulates pose a human health hazard by bypassing the defenses
4 within the mucous ciliary system and entering deep lung tissue. Construction of Alternative 2B
5 would result in the short-term exposure of receptors to PM10 and PM2.5 concentrations that exceed
6 SJVAPCD threshold. This would be a significant impact. Mitigation Measure AQ-9 outlines a tiered
7 strategy to reduce PM10 concentrations and public exposure to a less-than-significant level.

8 **Mitigation Measure AQ-9: Implement Measures to Reduce Re-Entrained Road Dust and**
9 **Receptor Exposure to PM2.5 and PM10**

10 Please see Mitigation Measure AQ-9 under Impact AQ-9 in the discussion of Alternative 1A

11 **Impact AQ-13: Exposure of Sensitive Receptors to Health Hazards from Localized Carbon**
12 **Monoxide**

13 **NEPA Effects:** Construction activity required for Alternative 2B would be similar to activity required
14 for Alternative 1B. Accordingly, the potential for Alternative 2B to result in CO hot-spots during
15 construction would be the same as Alternative 1B. Given that construction activities typically do not
16 result in CO hot-spots, onsite concentrations must comply with OSHA standards, and CO levels
17 dissipate as a function of distance, equipment-generated CO emissions (see Table 22-32) are not
18 anticipated to result in adverse health hazards to sensitive receptors. Refer to Impact AQ-13 under
19 Alternative 1B.

20 Traffic associated with construction may contribute to increase roadway congestion, which could
21 lead to conditions conducive to CO hot-spot formation. As shown in Table 19-21, the highest peak
22 hour traffic volumes under BPBGPP—11,968 vehicles per hour—would occur on westbound
23 Interstate 80 between Suisun Valley Road and State Route 12. This is about half of the congested
24 traffic volume modeled by BAAQMD (24,000 vehicles per hour) that would be needed to contribute
25 to a localized CO hot-spot, and less than half of the traffic volume modeled by SMAQMD (31,600
26 vehicles per hour). Accordingly, construction traffic is not anticipated to result in adverse health
27 hazards to sensitive receptors.

1 **CEQA Conclusion: Continuous engine exhaust may elevate localized CO concentrations.**
 2 **Receptors exposed to these CO “hot-spots” may have a greater likelihood of developing**
 3 **adverse health effects. Construction sites are less likely to result in localized CO hot-spots due**
 4 **to the nature of construction activities (Sacramento Metropolitan Air Quality Management**
 5 **District 2014), which normally utilize diesel-powered equipment for intermittent or short**
 6 **durations. Moreover, construction sites must comply with the OSHA CO exposure standards**
 7 **for onsite workers. Accordingly, given that construction activities typically do not result in**
 8 **CO hot-spots, onsite concentrations must comply with OSHA standards, and CO levels**
 9 **dissipate as a function of distance, equipment-generated CO emissions are not anticipated to**
 10 **result in significant health hazards to sensitive receptors. Similarly, peak-hour construction**
 11 **traffic on local roadways would not exceed BAAQMD’s or SMAQMD’s conservative screening**
 12 **criteria for the formation potential CO hot-spots. This impact would be less than significant.**
 13 **No mitigation is required.. Impact AQ-14: Exposure of Sensitive Receptors to Health Hazards**
 14 **from Diesel Particulate Matter in Excess of SMAQMD’s Chronic Non-Cancer and Cancer Risk**
 15 **Thresholds**

16 **NEPA Effects:** Construction activity required for Alternative 2B within the SMAQMD was assumed to
 17 equal activity required for Alternative 1B. Emissions and resulting health risk generated by
 18 Alternative 1B would therefore be representative of emissions and health risk generated by
 19 Alternative 2B.

20 As shown in Table 22-37, Alternative 1B would not exceed the SMAQMD’s chronic non-cancer or
 21 cancer thresholds and, thus, would not expose sensitive receptors to substantial pollutant
 22 concentrations. Therefore, this alternative’s effect of exposure of sensitive receptors to DPM
 23 emissions and their health hazards during construction would not be adverse.

24 **CEQA Conclusion:** DPM generated during construction poses inhalation-related chronic non-cancer
 25 hazard and cancer risk if nearby receptors are exposed to significant concentrations for prolonged
 26 durations. The DPM generated during Alternative 2B construction would not exceed the SMAQMD’s
 27 chronic non-cancer or cancer thresholds, and thus would not expose sensitive receptors to
 28 substantial pollutant concentrations. Therefore, this impact for DPM emissions would be less than
 29 significant. No mitigation is required.

30 **Impact AQ-15: Exposure of Sensitive Receptors to Health Hazards from Diesel Particulate**
 31 **Matter in Excess of YSAQMD’s Chronic Non-Cancer and Cancer Risk Thresholds**

32 **NEPA Effects:** Construction activity required for Alternative 2B within the YSAQMD was assumed to
 33 equal activity required for Alternative 1B. Emissions and associated health risks from localized
 34 exposure to DPM under Alternative 1B would therefore be representative of emissions and health
 35 risks generated by Alternative 2B. As shown in Table 22-38, Alternative 1B would not exceed the
 36 YSAQMD’s chronic non-cancer or cancer thresholds and, thus, would not expose sensitive receptors
 37 to substantial pollutant concentrations. Therefore, this alternative’s effect of exposure of sensitive
 38 receptors to DPM emissions and their health hazards during construction would not be adverse.

39 **CEQA Conclusion:** DPM generated during construction poses inhalation-related chronic non-cancer
 40 hazard and cancer risk if nearby receptors are exposed to significant concentrations for prolonged
 41 durations. The DPM generated during Alternative 2B construction would not exceed the YSAQMD’s
 42 chronic non-cancer or cancer thresholds, and thus would not expose sensitive receptors to
 43 substantial pollutant concentrations. Therefore, this impact for DPM emissions would be less than
 44 significant. No mitigation is required.

1 **Impact AQ-16: Exposure of Sensitive Receptors to Health Hazards from Diesel Particulate**
 2 **Matter in Excess of BAAQMD's Chronic Non-Cancer and Cancer Risk Thresholds**

3 **NEPA Effects:** Construction activity required for Alternative 2B within the BAAQMD was assumed to
 4 equal activity required for Alternative 1B. Emissions and associated health risks from exposure to
 5 localized DPM under Alternative 1B would therefore be representative of emissions and health risks
 6 generated by Alternative 2B. As shown in Table 22-39, Alternative 2B would not exceed the
 7 BAAQMD's chronic non-cancer or cancer thresholds and, thus, would not expose sensitive receptors
 8 to substantial pollutant concentrations. Therefore, this alternative's effect of exposure of sensitive
 9 receptors to DPM emissions and their health hazards during construction would not be adverse.

10 **CEQA Conclusion:** DPM generated during construction poses inhalation-related chronic non-cancer
 11 hazard and cancer risk if nearby receptors are exposed to significant concentrations for prolonged
 12 durations. The DPM generated during Alternative 2B construction would not exceed the BAAQMD's
 13 chronic non-cancer or cancer thresholds, and thus would not expose sensitive receptors to
 14 substantial pollutant concentrations. Therefore, this impact for DPM emissions would be less than
 15 significant. No mitigation is required.

16 **Impact AQ-17: Exposure of Sensitive Receptors to Health Hazards from Diesel Particulate**
 17 **Matter in Excess of SJVAPCD's Chronic Non-Cancer and Cancer Risk Thresholds**

18 **NEPA Effects:** The addition of the operational barrier in SJVAPCD would not generate additional
 19 construction emissions that would substantially affect sensitive receptors, relative to emissions
 20 associated with Alternative 1B. Accordingly, construction activity required for Alternative 2B within
 21 the SJVAPCD was assumed to equal activity required for Alternative 1B. Emissions and associated
 22 health risks from localized exposure to DPM under Alternative 1B would therefore be
 23 representative of emissions and health risks generated by Alternative 2B.

24 As shown in Table 22-40, chronic risk under Alternative 1B would be below the SJVAPCD's
 25 significance thresholds. However, cancer risk would exceed SJVAPCD's cancer risk significance
 26 threshold, even with implementation of environmental commitments (see Appendix 3B,
 27 *Environmental Commitments*). Therefore, this alternative's effect of exposure of sensitive receptors
 28 to DPM-related health hazards during construction would be adverse.

29 Mitigation Measure AQ-16 would be available to reduce exposure to substantial cancer risk by
 30 relocating affected receptors. Although Mitigation Measure AQ-16 would reduce the severity of this
 31 effect, the BDCP proponents are not solely responsible for implementation of the measure. If a
 32 landowner chooses not to accept DWR's offer of relocation assistance, an adverse effect in the form
 33 excess cancer risk above air district thresholds would occur. Therefore, this effect would be adverse.
 34 If, however, all landowners accept DWR's offer of relocation assistance, effects would not be
 35 adverse.

36 **CEQA Conclusion:** DPM generated during construction poses inhalation-related chronic non-cancer
 37 hazard and cancer risk if adjacent receptors are exposed to significant concentrations for prolonged
 38 durations. The DPM generated during Alternative 2B construction would not exceed the SJVAPCD's
 39 chronic non-cancer hazard threshold; however, it would exceed the SJVAPCD's cancer threshold.
 40 Therefore, this impact would be significant.

41 Mitigation Measure AQ-16 would be available to reduce exposure to substantial cancer risk by
 42 relocating affected receptors. Although Mitigation Measure AQ-16 would reduce the severity of this

1 effect, the BDCP proponents are not solely responsible for implementation of the measure. If a
 2 landowner chooses not to accept DWR's offer of relocation assistance, a significant impact in the
 3 form excess cancer risk above air district thresholds would occur. Therefore, this effect would be
 4 significant and unavoidable. If, however, all landowners accept DWR's offer of relocation assistance,
 5 the impact would be less than significant.

6 **Mitigation Measure AQ-16: Relocate Sensitive Receptors to Avoid Excess Cancer Risk**

7 Please see Mitigation Measure AQ-16 under Impact AQ-16 in the discussion of Alternative 1A

8 **Impact AQ-18: Exposure of Sensitive Receptors to *Coccidioides immitis* (Valley Fever)**

9 **NEPA Effects:** As discussed under Alternative 1A, earthmoving activities during construction could
 10 release *C. immitis* spores if filaments are present and other soil chemistry and climatic conditions
 11 are conducive to spore development. Receptors adjacent to the construction area may therefore be
 12 exposed to increase risk of inhaling *C. immitis* spores and subsequent development of Valley Fever.
 13 Dust-control measures are the primary defense against infection (United States Geological Survey
 14 2000). Implementation of advanced air-district recommended fugitive dust controls outlined in
 15 Appendix 3B, *Environmental Commitments*, would avoid dusty conditions and reduce the risk of
 16 contracting Valley Fever through routine watering and other controls. Therefore, this alternative's
 17 effect of exposure of sensitive receptors to increased Valley Fever risk during construction would
 18 not be adverse.

19 **CEQA Conclusion:** Construction of the water conveyance facility would involve earthmoving
 20 activities that could release *C. immitis* spores if filaments are present and other soil chemistry and
 21 climatic conditions are conducive to spore development. Receptors adjacent to the construction area
 22 may therefore be exposed to increase risk of inhaling *C. immitis* spores and subsequent development
 23 of Valley Fever. Implementation of air-district recommended fugitive dust controls outlined in
 24 Appendix 3B, *Environmental Commitments*, would avoid dusty conditions and reduce the risk of
 25 contracting Valley Fever through routine watering and other controls. Therefore, this impact would
 26 be less than significant. No mitigation is required.

27 **Impact AQ-19: Creation of Potential Odors Affecting a Substantial Number of People during** 28 **Construction or Operation of the Proposed Water Conveyance Facility**

29 **NEPA Effects:** As discussed under Alternative 1A, odors from construction activities would be
 30 localized and generally confined to the immediate area surrounding the construction site. Moreover,
 31 odors would be temporary and localized, and they would cease once construction activities have
 32 been completed. Thus, it is not anticipated that construction of CM1 would create objectionable
 33 odors from construction equipment or asphalt paving.

34 Construction of the water conveyance facility would require removal of subsurface material during
 35 tunnel excavation and sediment removal. As discussed under Alternative 1A, geotechnical tests
 36 indicate that VOC levels in Plan Area soils are below the method detection limits, indicating that
 37 organic decay of exposed RTM and sediment will be relatively low (URS 2014). Moreover, drying
 38 and stockpiling of the removed RTM and sediment will occur under aerobic conditions, which will
 39 further limit any potential decomposition and associated malodorous products. Accordingly, it is not
 40 anticipated that tunnel and sediment excavation would create objectionable odors.

1 Typical facilities known to produce odors include landfills, wastewater treatment plants, food
2 processing facilities, and certain agricultural activities. Alternative 2B would not result in the
3 addition of facilities associated with odors, and as such, long-term operation of the water
4 conveyance facility would not result in objectionable odors.

5 **CEQA Conclusion:** Alternative 2B would not result in the addition of major odor producing facilities.
6 Diesel emissions during construction could generate temporary odors, but these would quickly
7 dissipate and cease once construction is completed. Likewise, potential odors generated during
8 asphalt paving would be addressed through mandatory compliance with air district rules and
9 regulations. While tunnel excavation would unearth substantial quantities of RTM, geotechnical
10 tests indicate that soils in the Plan Area have relatively low organic constituents. Moreover, drying
11 and stockpiling of the removed RTM will occur under aerobic conditions, which will further limit
12 any potential decomposition and associated malodorous products. Accordingly, the impact of
13 exposure of sensitive receptors to potential odors during construction is therefore less than
14 significant. No mitigation is required.

15 **Impact AQ-20: Generation of Criteria Pollutants in the Excess of Federal *De Minimis***
16 **Thresholds from Construction and Operation and Maintenance of the Proposed Water**
17 **Conveyance Facility**

18 **NEPA Effects:** As discussed above, emissions generated by Alternative 1B within the SFNA and
19 SFBAAB would be representative of emissions generated by Alternative 2B (refer to Table 22-41).
20 Due to the operable barrier at head of Old River, emissions within the SJVAB would be slightly
21 higher than those quantified for Alternative 1B. To ensure the emissions analysis within the SJVAB
22 accurately evaluates all project components, construction emissions associated with the head of Old
23 River barrier were quantified and added to the emissions estimates for the SJVAB under Alternative
24 1B. The resulting emissions are provided in Table 22-74. Exceedances of the federal *de minimis*
25 thresholds are shown in underlined text.

1 **Table 22-74. Criteria Pollutant Emissions from Construction and Operation of Alternative 2B in**
 2 **Nonattainment and Maintenance Areas of the SJVAB (tons/year)**

Year	ROG	NO _x ^a	CO ^b	PM10	PM2.5	SO ₂
2016	0	0	0	2	<1	0
2017	0	0	0	0	0	0
2018	<u>13</u>	<u>74</u>	<1	51	8	<1
2019	<u>46</u>	<u>327</u>	<1	<u>118</u>	23	1
2020	<u>30</u>	<u>256</u>	<1	54	13	1
2021	<u>33</u>	<u>273</u>	<1	59	14	1
2022	<u>22</u>	<u>169</u>	<1	42	9	<1
2023	<u>13</u>	<u>88</u>	<1	33	6	<1
2024	<u>11</u>	<u>75</u>	<1	27	5	<1
2025	1	5	<1	8	1	<1
2026	<1	2	<1	3	<1	<1
2027	<1	<1	<1	3	1	<1
2028	0	0	0	2	0	0
2029	0	0	0	0	0	0
ELT	<0.01	0.01	0.02	<0.01	<0.01	<0.01
LLT	<0.01	0.01	0.01	<0.01	<0.01	<0.01
<i>De Minimis</i>	10	10	100	100	100	100

^a NO_x emissions in excess of 100 tons per year within federally designated PM10 and PM2.5 nonattainment or maintenance areas trigger a secondary PM10 and PM2.5 precursor threshold. NO_x emissions in excess of this secondary threshold could conflict with the applicable PM10 and PM2.5 SIPs. Accordingly, NO_x offsets pursued for the purposes of general conformity for those years in which NO_x emissions exceed 100 tons must occur within the federally designated PM2.5 nonattainment and PM10 maintenance areas, as applicable.

^b The proposed water conveyance facility is located within a federally designated CO attainment area. Accordingly, CO emissions generated by construction of CM1 are not subject to the General Conformity Rule and are excluded from the emissions summary and general conformity analysis (40 CFR Part 51 and 93, Section III.A). Emissions presented in the table are limited those generated by haul trucks, which would occur in federally designated CO maintenance area.

3

4 **Sacramento Federal Nonattainment Area**

5 As shown in Table 22-41, implementation of Alternative 1B (and thus Alternative 2B) would exceed
 6 the following SFNA federal *de minimis* thresholds:

- 7 • ROG: 2023–2024
- 8 • NO_x: 2018-2028
- 9 • PM10: 2024

10 ROG and NO_x are precursors to ozone and NO_x is a precursor to PM, for which the SFNA is in
 11 nonattainment for the NAAQS. Sacramento County is also a maintenance area for the PM10 NAAQS.
 12 Since project emissions exceed the federal *de minimis* thresholds for ROG, NO_x, and PM10, a general
 13 conformity determination must be made to demonstrate that total direct and indirect emissions of

1 ROG, NO_x, and PM₁₀ would conform to the appropriate SFNA SIP for each year of construction in
2 which the *de minimis* thresholds are exceeded.

3 NO_x is also a precursor to PM and can contribute to PM formation. As discussed above, Sacramento
4 County is currently designated maintenance for the PM₁₀ NAAQS and portions of the SVAB are
5 designated nonattainment for the PM_{2.5} NAAQS. NO_x emissions in excess of 100 tons per year in
6 Sacramento County trigger a secondary PM₁₀ precursor threshold, whereas NO_x emissions in excess
7 of 100 tons per year in the SVAB trigger a secondary PM_{2.5} precursor threshold. Since NO_x
8 emissions can contribute to PM formation, NO_x emissions in excess of these secondary precursor
9 thresholds could conflict with the applicable PM₁₀ and PM_{2.5} SIPs. Accordingly, NO_x offsets pursued
10 for the purposes of general conformity for those years in which NO_x emissions exceed 100 tons must
11 occur within the federally designated PM_{2.5} nonattainment and PM₁₀ maintenance areas of the
12 SVAB.

13 As shown in Table 22-31, NO_x emissions generated by construction activities in SMAQMD
14 (Sacramento County) would exceed 100 tons per year between 2019 and 2027. The project
15 therefore triggers the secondary PM₁₀ precursor threshold, requiring all NO_x offsets for 2019
16 through 2027 to occur within Sacramento County.

17 Given the magnitude of NO_x emissions and the limited geographic scope available for offsets in 2019
18 through 2027 (Sacramento County), neither Mitigation Measures AQ-1a nor 1b could feasibly reduce
19 NO_x emissions to net zero for the purposes of general conformity.³³ This impact would be adverse.
20 In the event that Alternative 2B is selected as the APA, Reclamation, USFWS, and NMFS would need
21 to demonstrate that conformity is met for NO_x and secondary PM₁₀ formation through a local air
22 quality modeling analysis (i.e., dispersion modeling) or other acceptable methods to ensure project
23 emissions do not cause or contribute to any new violations of the NAAQS or increase the frequency
24 or severity of any existing violations.

25 **Mitigation Measure AQ-1a: Mitigate and Offset Construction-Generated Criteria Pollutant**
26 **Emissions within the SFNA to Net Zero (0) for Emissions in Excess of General Conformity**
27 ***De Minimis* Thresholds (Where Applicable) and to Quantities below Applicable CEQA**
28 **Thresholds for Other Pollutants**

29 Please see Mitigation Measure AQ-1a under Impact AQ-1 in the discussion of Alternative 1A.

30 **Mitigation Measure AQ-1b: Develop an Alternative or Complementary Offsite Mitigation**
31 **Program to Mitigate and Offset Construction-Generated Criteria Pollutant Emissions**
32 **within the SFNA to Net Zero (0) for Emissions in Excess of General Conformity *De Minimis***
33 **Thresholds (Where Applicable) and to Quantities below Applicable CEQA Thresholds for**
34 **Other Pollutants**

35 Please see Mitigation Measure AQ-1b under Impact AQ-1 in the discussion of Alternative 1A.

³³ The secondary PM precursor thresholds are triggered through the General Conformity Regulation (40 CFR 93.153 (a)(1)). Accordingly, confinement of the geographic scope for available offsets only applies to the General Conformity determination and does not influence mitigation feasibility for Impacts AQ-1 or AQ-28.

1 **San Joaquin Valley Air Basin**

2 As shown in Table 22-74, implementation of Alternative 2B would exceed SJVAB federal *de minimis*
3 thresholds for the following pollutants and years.

- 4 • ROG: 2018–2024
- 5 • NO_x: 2018–2024
- 6 • PM10: 2019

7 ROG and NO_x are precursors to ozone, for which the SJVAB is in nonattainment for the NAAQS.
8 Likewise, the SJVAB is current classified as a maintenance area for PM10. Since project emissions
9 exceed the federal *de minimis* threshold for ROG, NO_x, and PM10, a general conformity
10 determination must be made to demonstrate that total direct and indirect emissions would conform
11 to the appropriate SJVAB SIPs for each year of construction for which the *de minimis* thresholds are
12 exceed.

13 NO_x is also a precursor to PM and can contribute to PM formation. As discussed above, the SJVAB is
14 currently designated maintenance for the PM10 NAAQS and nonattainment for the PM2.5 NAAQS.
15 NO_x emissions in excess of 100 tons per year trigger a secondary PM precursor threshold, and could
16 conflict with the applicable PM10 and PM2.5 SIPs. As shown in Table 22-74, NO_x emissions
17 generated by construction activities in the SJVAB would exceed 100 tons per year between 2019 and
18 2022. NO_x offsets pursued for the purposes of general conformity for those years in which NO_x
19 emissions exceed 100 tons must occur within the federally designated PM2.5 nonattainment and
20 PM10 maintenance areas of the SJVAB, which are consistent with the larger nonattainment
21 boundary for ozone

22 As shown in Appendix 22E, *General Conformity Determination*, Attachment 22E-1, SJVAPCD confirms
23 that sufficient emissions reduction credits would be available to fully offset ROG, NO_x, and PM10
24 emissions in excess of the federal *de minimis* thresholds zero through implementation of Mitigation
25 Measures AQ-4a and 4b. Mitigation Measures AQ-4a and 4b will ensure the requirements of the
26 mitigation and offset program are implemented and conformity requirements for ROG, NO_x, and
27 PM10 are met, should Alternative 2B be selected as the APA.

28 **Mitigation Measure AQ-4a: Mitigate and Offset Construction-Generated Criteria Pollutant**
29 **Emissions within SJVAPCD/SJVAB to Net Zero (0) for Emissions in Excess of General**
30 **Conformity *De Minimis* Thresholds (Where Applicable) and to Quantities below**
31 **Applicable SJVAPCD CEQA Thresholds for Other Pollutants**

32 Please see Mitigation Measure AQ-4a under Impact AQ-4 in the discussion of Alternative 1A.

33 **Mitigation Measure AQ-4b: Develop an Alternative or Complementary Offsite Mitigation**
34 **Program to Mitigate and Offset Construction-Generated Criteria Pollutant Emissions**
35 **within the SJVAPCD/SJVAB to Net Zero (0) for Emissions in Excess of General Conformity**
36 ***De Minimis* Thresholds (Where Applicable) and to Quantities below Applicable SJVAPCD**
37 **CEQA Thresholds for Other Pollutants**

38 Please see Mitigation Measure AQ-4b under Impact AQ-4 in the discussion of Alternative 1A.

1 **San Francisco Bay Area Air Basin**

2 As shown in Table 22-41, implementation of the Alternative 1B (and thus Alternative 2B) would not
3 exceed any of the SFBAAB federal *de minimis* thresholds. Accordingly, a general conformity
4 determination is not required as total direct and indirect emissions of NO_x would conform to the
5 appropriate SFBAAB SIPs.

6 **CEQA Conclusion:** SFNA and SJVAB are classified as nonattainment or maintenance areas with
7 regard to the ozone and PM10 NAAQS, and the impact of increases in criteria pollutant emissions
8 above the air basin *de minimis* thresholds could conflict with or obstruct implementation of the
9 applicable air quality plans. Since construction emissions in the SFNA and SJVAB would exceed the
10 *de minimis* thresholds for ROG, NO_x, and PM10, this impact would be significant.

11 Mitigation Measures AQ-4a and AQ-4b would ensure project emissions would not result in an
12 increase in regional ROG, NO_x, or PM10 in the SJVAB. These measures would therefore ensure total
13 direct and indirect ROG, NO_x, and PM10 emissions generated by the project would conform to the
14 appropriate SJVAB SIPs by offsetting the action's emissions in the same or nearby area to net zero.
15 Accordingly, impacts would be less than significant with mitigation in the SJVAB.

16 Although Mitigation Measures AQ-1a and AQ-1b would reduce NO_x in the SFNA, given the magnitude
17 of NO_x emissions and the limited geographic scope available for offsets (Sacramento County),
18 neither measure could feasibly reduce NO_x emissions to net zero for the purposes of general
19 conformity. This impact would be significant and unavoidable in the SFNA.

20 Emissions generated within the SFBAAB would not exceed the SFBAAB *de minimis* thresholds and
21 would therefore conform to the appropriate SFBAAB SIPs. No mitigation is required.

22 **Impact AQ-21: Generation of Cumulative Greenhouse Gas Emissions during Construction of**
23 **the Proposed Water Conveyance Facility**

24 **NEPA Effects:** GHG emissions generated by construction of Alternative 2B would be similar to
25 emissions generated for Alternative 1B (see Table 22-42). However, because Alternative 2B includes
26 an operable barrier at head of Old River, total emissions associated with Alternative 2B would be
27 slightly higher than Alternative 1A due to additional equipment activity. Table 22-75 summarizes
28 GHG emissions associated with Alternative 2B. Emissions with are presented with implementation
29 of environmental commitments (see Appendix 3B, *Environmental Commitments*) and state mandates
30 to reduce GHG emissions.

31 Table 22-43 summarizes GHG emissions that would be generated in the BAAQMD, SMAQMD, and
32 YSAQMD. The head of Old River barrier would be constructed within the SJVAPCD under Alternative
33 2B. Table 22-76 summarizes GHG emissions that would be generated in the SJVAPCD. The table does
34 not include emissions from electricity generation as these emissions would be generated by power
35 plants located throughout the state (see discussion preceding this impact analysis). GHG emissions
36 presented in Tables 22-43 and 22-76 are therefore provided for information purposes only.

37 As shown in Table 22-75, construction of Alternative 2B would generate a total of 2.0 million metric
38 tons of GHG emissions. This is equivalent to adding 427,000 typical passenger vehicles to the road
39 during construction (U.S. Environmental Protection Agency 2014e). As discussed in section 22.3.2,
40 *Determination of Effects*, any increase in emissions above net zero associated with construction of
41 the BDCP water conveyance features would be adverse. Accordingly, this effect would be adverse.

Mitigation Measure AQ-21, which would develop a GHG Mitigation Program to reduce construction-related GHG emissions to net zero, is available address this effect.

CEQA Conclusion: Construction of Alternative 2B would generate a total of 2.0 million metric tons of GHG emissions. This is equivalent to adding 427,000 typical passenger vehicles to the road during construction (U.S. Environmental Protection Agency 2014e). As discussed in section 22.3.2, *Determination of Effects*, any increase in emissions above net zero associated with construction of the BDCP water conveyance features would be significant. Mitigation Measure AQ-21 would develop a GHG Mitigation Program to reduce construction-related GHG emissions to net zero. Accordingly, this impact would be less-than-significant with implementation of Mitigation Measure AQ-21.

Table 22-75. GHG Emissions from Construction of Alternative 2B (metric tons/year)^a

Year	Equipment and Vehicles (CO ₂ e)	Electricity (CO ₂ e)	Concrete Batching (CO ₂)	Total CO ₂ e
2016	0	0	409	409
2017	0	0	0	0
2018	56,832	185	50,761	107,777
2019	175,639	1,033	7,973	184,645
2020	106,574	4,960	49,542	161,077
2021	118,358	13,206	98,263	229,827
2022	104,853	18,545	148,933	272,331
2023	136,856	16,508	145,408	298,773
2024	152,885	17,220	173,968	344,072
2025	71,433	11,616	116,167	199,217
2026	61,396	4,147	27,838	93,382
2027	61,806	792	40,147	102,745
2028	27,294	21	7,899	35,214
2029	0	1	0	1
<i>Total</i>	<i>1,073,927</i>	<i>88,234</i>	<i>867,307</i>	<i>2,029,469</i>

^a Emissions estimates do not account for GHG flux from land disturbance. Surface and subsurface (e.g., tunneling) activities may oxidize peat soils, releasing GHG emissions. However, recent geotechnical surveys indicated that peat is negligible below 80 feet of depth. The tunnel will be placed below this range and the design adjusted if peat soils are discovered. Peat material encountered during surface excavation for non-tunnel work will be covered with top soil to reduce oxidation when needed.

Values may not total correctly due to rounding.

11

Table 22-76. GHG Emissions from Construction of Alternative 2B by Air District (metric tons/year)^a

Air District	Equipment and Vehicles (CO ₂ e)	Concrete Batching (CO ₂) ^a	Total CO ₂ e ^b
SJVAPCD	400,705	433,654	834,358

^a Emissions assigned to each air district based on the number of batching plants located in that air district.

^b Values may not total correctly due to rounding.

13

1 **Mitigation Measure AQ-21: Develop and Implement a GHG Mitigation Program to Reduce**
 2 **Construction Related GHG Emissions to Net Zero (0)**

3 Please see Mitigation Measure AQ-21 under Impact AQ-21 in the discussion of Alternative 1A.

4 **Impact AQ-22: Generation of Cumulative Greenhouse Gas Emissions from Operation and**
 5 **Maintenance of the Proposed Water Conveyance Facility and Increased Pumping**

6 **NEPA Effects:** Operation of Alternative 2B would generate direct and indirect GHG emissions.
 7 Sources of direct emissions include heavy-duty equipment, on road crew trucks, and employee
 8 vehicle traffic. Indirect emissions would be generated predominantly by electricity consumption
 9 required for pumping as well as, maintenance, lighting, and other activities.

10 Table 22-77 summarizes long-term operational GHG emissions associated with operations,
 11 maintenance, and increased SWP pumping. Emissions were quantified for both ELT and LLT
 12 conditions, although activities would take place annually until project decommissioning. Emissions
 13 include state mandates to reduce GHG emissions (described in Impact AQ-21) are presented (there
 14 are no BDCP specific operational environmental commitments). Total CO₂e emissions are compared
 15 to both the No Action Alternative (NEPA point of comparison) and Existing Conditions (CEQA
 16 baseline). As discussed in Section 22.3.1.2, equipment emissions are assumed to be zero under both
 17 the No Action Alternative (NEPA point of comparison) and Existing Conditions (CEQA baseline). The
 18 equipment emissions presented in Table 22-77 are therefore representative of project impacts for
 19 both the NEPA and CEQA analysis.

20 **Table 22-77. GHG Emissions from Operation, Maintenance, and Increased SWP Pumping, Alternative**
 21 **2B (metric tons/year)**

Condition	Equipment CO ₂ e	Electricity CO ₂ e		Total CO ₂ e	
		NEPA Point of Comparison	CEQA Baseline	NEPA Point of Comparison	CEQA Baseline
ELT	438	-	85,458	-	85,896
LLT	420	22,585	1,948	23,005	2,368

Note: The *NEPA point of comparison* compares total CO₂e emissions after implementation of Alternative 2B to the No Action Alternative, whereas the *CEQA baseline* compares total CO₂e emissions to Existing Conditions.

22
 23 Table 22-45 summarizes equipment CO₂e emissions that would be generated in the BAAQMD and
 24 SMAQMD. The head of Old River barrier would be constructed within the SJVAPCD under
 25 Alternative 2B. Table 22-78 summarizes equipment CO₂e associated with operational activities in
 26 SJVAPCD. The table does not include emissions from SWP pumping as these emissions would be
 27 generated by power plants located throughout the state (see discussion preceding this impact
 28 analysis). GHG emissions presented in Tables 22-45 and 22-78 are therefore provided for
 29 information purposes only.

1 **Table 22-78. Equipment CO₂e Emissions from Operation and Maintenance of Alternative 2B in**
 2 **SJVAPCD (metric tons/year)^a**

Air District	ELT	LLT
SJVAPCD	5	5

^a Emissions do not include emissions generated by increased SWP pumping.

4 **SWP Operational and Maintenance GHG Emissions Analysis**

5 Alternative 2B would add approximately 1,078 GWh³⁴ of additional net electricity demand to
 6 operation of the SWP each year assuming 2060 conditions. Conditions at 2060 (LLT) are used for
 7 this analysis because they yield the largest potential additional net electricity requirements and
 8 therefore represent the largest potential impact. This 1,078 GWh is based on assumptions of future
 9 conditions and operations and includes all additional energy required to operate the project with
 10 BDCP Alternative 2B including any additional energy associated with additional water being moved
 11 through the system.

12 In the CAP, DWR developed estimates of historical, current, and future GHG emissions. Figure 22-11
 13 shows those emissions as they were projected in the CAP and how those emissions projections
 14 would change with the additional electricity demands needed to operate the SWP with the addition
 15 of BDCP Alternative 2B. As shown in Figure 22-11, in 2024, the year BDCP Alternative 2B is
 16 projected to go online, DWR total emissions jump from around 912,000 metric tons of CO₂e to
 17 nearly 1.4 million metric tons of CO₂e. This elevated level is approximately 120,000 metric tons of
 18 CO₂e above DWR's designated GHG emissions reduction trajectory (red line, which is the linear
 19 interpolation between DWR's 2020 GHG emissions goal and DWR's 2050 GHG emissions goal.) The
 20 projection indicates that after the initial jump in emissions, existing GHG emissions reduction
 21 measures would bring the elevated GHG emissions level back down below DWR's GHG emissions
 22 reduction trajectory by 2035 and that DWR would still achieve its GHG emission reduction goal by
 23 2050.

24 Because employing only DWR's existing GHG emissions reduction measures would result in a large
 25 initial increase in emissions and result in DWR emissions exceeding the emissions reduction
 26 trajectory for several years, DWR will take additional actions to reduce GHG emissions if BDCP
 27 Alternative 2B is implemented.

28 The CAP sets forth DWR's plan to manage its activities and operations to achieve its GHG emissions
 29 reduction goals. The CAP commits DWR to monitoring its emissions each year and evaluating its
 30 emissions every five years to determine whether it is on a trajectory to achieve its GHG emissions
 31 reduction goals. If it appears that DWR will not meet the GHG emission reduction goals established
 32 in the plan, DWR may make adjustments to existing emissions reduction measures, devise new
 33 measures to ensure achievement of the goals, or take other action. Given the scale of additional
 34 emissions that BDCP Alternative 2B would add to DWR's total GHG emissions, DWR has evaluated
 35 the most likely method that it would use to compensate for such an increase in GHG emissions:

³⁴ Estimated net energy demand differs slightly from what is presented in Chapter 21, *Energy*. This is because the above analysis includes energy needed for transmission and distribution of water along the Valley String, which is required to enable a comparison with the assumptions in DWR's CAP.

1 modification of DWR's REPP. The DWR REPP (GHG emissions reduction measure OP-1 in the CAP)
 2 describes the amount of additional renewable energy that DWR expects to purchase each year to
 3 meet its GHG emissions reduction goals. The REPP lays out a long-term strategy for renewable
 4 energy purchases, though actual purchases of renewable energy may not exactly follow the schedule
 5 in the REPP and will ultimately be governed by actual operations, measured emissions, and
 6 contracting.

7 Table 22-79 below shows how the REPP could be modified to accommodate BDCP Alternative 2B,
 8 and shows that additional renewable energy resources could be purchased during years 2022–2025
 9 over what was programmed in the original REPP. The net result of this change is that by 2026
 10 DWR's energy portfolio would contain nearly 1,042 GWh of renewable energy (in addition to
 11 hydropower generated at SWP facilities). This amount is considerably larger than the amount called
 12 for in the original DWR REPP (1,042 compared to 792). In later years, 2031–2050, DWR would bring
 13 on slightly fewer additional renewable resources than programmed in the original REPP. Figure 22-
 14 12 shows how this modified Renewable Energy Procurement Plan would affect DWR's projected
 15 future emissions with BDCP Alternative 2B.

16 **Table 22-79. Changes in Expected Renewable Energy Purchases 2011–2050 (Alternative 2B)**

Year(s)	Additional GWh of Renewable Power Purchased (Above previous year)	
	Original CAP	New CAP
2011–2020	36	36
2021	72	72
2022–2025	72	122
2026–2030	72	72
2031–2040	108	53
2041–2050	144	74
Total Cumulative	52,236	48,761

17
 18 As shown in the analysis above and consistent with the analysis contained in the CAP and associated
 19 Initial Study and Negative Declaration for the CAP, BDCP Alternative 2B would not adversely affect
 20 DWR's ability to achieve the GHG emissions reduction goals set forth in the CAP. Further, Alternative
 21 2B would not conflict with any of DWR's specific action GHG emissions reduction measures and
 22 implements all applicable project level GHG emissions reduction measures as set forth in the CAP.
 23 BDCP Alternative 2B is therefore consistent with the analysis performed in the CAP. There would be
 24 no adverse effect.

25 **CEQA Conclusion:** SWP GHG emissions currently are below 1990 levels and achievement of the
 26 goals of the CAP means that total DWR GHG emissions will be reduced to 50% of 1990 levels by
 27 2020 and to 80% of 1990 levels by 2050. The implementation of BDCP Alternative 2B would not
 28 affect DWR's established emissions reduction goals or baseline (1990) emissions and therefore
 29 would not result in a change in total DWR emissions that would be considered significant. Prior
 30 adoption of the CAP by DWR already provides a commitment on the part of DWR to make all
 31 necessary modifications to DWR's REPP (as described above) or any other GHG emission reduction
 32 measure in the CAP that are necessary to achieve DWR's GHG emissions reduction goals. Therefore
 33 no amendment to the approved CAP is necessary to ensure the occurrence of the additional GHG
 34 emissions reduction activities needed to account for BDCP-related operational emissions. The effect

1 of BDCP Alternative 2B with respect to GHG emissions is less than cumulatively considerable and
2 therefore less than significant. No mitigation is required.

3 **Impact AQ-23: Generation of Cumulative Greenhouse Gas Emissions from Increased CVP**
4 **Pumping as a Result of Implementation of CM1**

5 **NEPA Effects:** As previously discussed, DWR's CAP cannot be used to evaluate environmental
6 impacts associated with increased CVP pumping, as emissions associated with CVP are not under
7 DWR's control and are not included in the CAP. Accordingly, GHG emissions resulting from increased
8 CVP energy use are evaluated separately from GHG emissions generated as a result of SWP energy
9 use.

10 Under Alternative 2B, operation of the CVP yields the generation of clean, GHG emissions-free,
11 hydroelectric energy. This electricity is sold into the California electricity market or directly to
12 energy users. Analysis of the No Action Alternative indicates that the CVP generates and will
13 continue to generate all of the electricity needed to operate the CVP system and approximately
14 3,500 GWh of excess hydroelectric energy that would be sold to energy users throughout California.
15 Implementation of Alternative 2B, however, would result in an increase of 103 GWh in the demand
16 for CVP generated electricity, which would result in a reduction of 103 GWh of electricity available
17 for sale from the CVP to electricity users. This reduction in the supply of GHG emissions-free
18 electricity to the California electricity users could result in a potential indirect effect of the project,
19 as these electricity users would have to acquire substitute electricity supplies that may result in GHG
20 emissions (although additional conservation is also a possible outcome as well).

21 It is unknown what type of power source (e.g., renewable, natural gas) would be substituted for CVP
22 electricity or if some of the lost power would be made up with higher efficiency. Given State
23 mandates for renewable energy and incentives for energy efficiency, it is possible that a
24 considerable amount of this power would be replaced by renewable resources or would cease to be
25 needed as a result of higher efficiency. However, to ensure a conservative analysis, indirect
26 emissions were quantified for the entire quantity of electricity (103 GWh) using the current and
27 future statewide energy mix (adjusted to reflect RPS) (please refer to Appendix 22A, *Air Quality*
28 *Analysis Methodology*, for additional detail on quantification methods).

29 Substitution of 103 GWh of electricity with a mix of sources similar to the current statewide mix
30 would result in emissions of 28,851 metric tons of CO₂e; however, under expected future conditions
31 (after full implementation of the RPS), emissions would be 22,419 metric tons of CO₂e.

32 Use of CVP hydroelectricity to meet increased electricity demand from operation of CVP facilities
33 associated with Alternative 2B would reduce available CVP hydroelectricity to other California
34 electricity users. Substitution of the lost electricity with electricity from other sources could
35 indirectly result in an increase of GHG emissions that is comparable or larger than the level of GHG
36 emissions that trigger mandatory GHG reporting for major facilities. As a result, these emissions
37 could contribute to a cumulatively considerable effect and are therefore adverse. However, these
38 emissions would be caused by dozens of independent electricity users, who had previously bought
39 CVP power, making decisions about different ways to substitute for the lost power. These decisions
40 are beyond the control of Reclamation or any of the other BDCP Lead Agencies. Further, monitoring
41 to determine the actual indirect change in emissions as a result of BDCP actions would not be
42 feasible. In light of the impossibility of predicting where any additional emissions would occur, as
43 well as Reclamation's lack of regulatory authority over the purchasers of power in the open market,
44 no workable mitigation is available or feasible.

1 **CEQA Conclusion:** Operation of the CVP is a federal activity beyond the control of any State agency
 2 such as DWR, and the power purchases by private entities or public utilities in the private
 3 marketplace necessitated by a reduction in available CVP-generated hydroelectric power are beyond
 4 the control of the State, just as they are beyond the control of Reclamation. For these reasons, there
 5 are no feasible mitigation measures that could reduce this potentially significant indirect impact,
 6 which is solely attributable to operations of the CVP and not the SWP, to a less than significant level.
 7 This impact is therefore determined to be significant and unavoidable.

8 **Impact AQ-24: Generation of Regional Criteria Pollutants from Implementation of CM2–CM11**

9 **NEPA Effects:** Table 22-38 summarizes potential construction and operational emissions that may
 10 be generated by implementation of CM2–CM11. See the discussion of Impact AQ-24 under
 11 Alternative 1A.

12 Criteria pollutants from restoration and enhancement actions could exceed applicable general
 13 conformity *de minimis* levels and applicable local thresholds. The effect would vary according to the
 14 equipment used in construction of a specific conservation measure, the location, the timing of the
 15 actions called for in the conservation measure, and the air quality conditions at the time of
 16 implementation; these effects would be evaluated and identified in the subsequent project-level
 17 environmental analysis conducted for the CM2–CM11 restoration and enhancement actions. The
 18 effect of increases in emissions during implementation of CM2–CM11 in excess of applicable general
 19 conformity *de minimis* levels and air district regional thresholds (Table 22-8) could violate air basin
 20 SIPs and worsen existing air quality conditions. Mitigation Measure AQ-24 would be available to
 21 reduce this effect, but emissions would still be adverse.

22 **CEQA Conclusion:** Construction and operational emissions associated with the restoration and
 23 enhancement actions would result in a significant impact if the incremental difference, or increase,
 24 relative to Existing Conditions exceeds the applicable local air district thresholds shown in Table 22-
 25 8; these effects are expected to be further evaluated and identified in the subsequent project-level
 26 environmental analysis conducted for the CM2–CM11 restoration and enhancement actions.
 27 Mitigation Measure AQ-24 would be available to reduce this effect, but may not be sufficient to
 28 reduce emissions below applicable air quality management district thresholds (see Table 22-8).
 29 Consequently, this impact would be significant and unavoidable.

30 **Mitigation Measure AQ-24: Develop an Air Quality Mitigation Plan (AQMP) to Ensure Air** 31 **District Regulations and Recommended Mitigation are Incorporated into Future** 32 **Conservation Measures and Associated Project Activities**

33 Please see Mitigation Measure AQ-24 under Impact AQ-24 in the discussion of Alternative 1A.

34 **Impact AQ-25: Exposure of Sensitive Receptors to Health Hazards from Localized Particulate** 35 **Matter, Carbon Monoxide, and Diesel Particulate Matter from Implementation of CM2–CM11**

36 **NEPA Effects:** The potential for Alternative 2B to expose sensitive receptors increased health
 37 hazards from localized PM, CO, and DPM would be similar to Alternative 1A. Activities shown in
 38 Table 22-38 with the greatest potential to have short or long-term air quality impacts are also
 39 anticipated to have the greatest potential to expose receptors to substantial pollutant
 40 concentrations. The effect would vary according to the equipment used, the location and timing of
 41 the actions called for in the conservation measure, the meteorological and air quality conditions at
 42 the time of implementation, and the location of receptors relative to the emission source. Potential

1 health effects would be evaluated and identified in the subsequent project-level environmental
2 analysis conducted for the CM2–CM11 restoration and enhancement actions.

3 The effect of increases in PM, CO, or DPM (cancer and non-cancer-risk) in excess of applicable air
4 district thresholds (Table 22-8) at receptor locations could result in adverse health impacts.
5 Mitigation Measures AQ-24 and AQ-25 would be available to reduce this effect.

6 **CEQA Conclusion:** Construction and operational emissions associated with the restoration and
7 enhancement actions under Alternative 2B would result in a significant impact if PM, CO, or DPM
8 (cancer and non-cancer-risk) concentrations at receptor locations exceed the applicable local air
9 district thresholds shown in Table 22-8; these effects are expected to be further evaluated and
10 identified in the subsequent project-level environmental analysis conducted for the CM2–CM11
11 restoration and enhancement actions. Mitigation Measures AQ-24 and AQ-25 would ensure localized
12 concentrations at receptor locations would be below applicable air quality management district
13 thresholds (see Table 22-8). Consequently, this impact would be less than significant.

14 **Mitigation Measure AQ-24: Develop an Air Quality Mitigation Plan (AQMP) to Ensure Air**
15 **District Regulations and Recommended Mitigation are Incorporated into Future**
16 **Conservation Measures and Associated Project Activities**

17 Please see Mitigation Measure AQ-24 under Impact AQ-24 in the discussion of Alternative 1A.

18 **Mitigation Measure AQ-25: Prepare a Project-Level Health Risk Assessment to Reduce**
19 **Potential Health Risks from Exposure to Localized DPM and PM Concentrations**

20 Please see Mitigation Measure AQ-25 under Impact AQ-25 in the discussion of Alternative 1A.

21 **Impact AQ-26: Creation of Potential Odors Affecting a Substantial Number of People from**
22 **Implementation of CM2–CM11**

23 **NEPA Effects:** The potential for Alternative 2B to expose sensitive receptors increased odors would
24 be similar to Alternative 1A. Accordingly, construction activities associated with CM2-CM11 are not
25 anticipated to result in nuisance odors. Similarly, while restored land uses associated with the
26 program have the potential to generate odors from natural processes, the emissions would be
27 similar in origin and magnitude to the existing land use types in the restored area (e.g., managed
28 wetlands). Moreover, specific odor effects would be evaluated and identified in the subsequent
29 project-level environmental analysis conducted for the CM2–CM11 restoration and enhancement
30 actions. Accordingly, odor-related effects associated with CM2–CM11 would not be adverse.

31 **CEQA Conclusion:** Alternative 2B would not result in the addition of major odor producing facilities.
32 Diesel emissions during construction could generate temporary odors, but these would quickly
33 dissipate and cease once construction is completed. Increases in wetland, tidal, and upland habitats
34 may increase the potential for odors from natural processes. However, the origin and magnitude of
35 odors would be similar to the existing land use types in the restored area (e.g., managed wetlands).
36 Moreover, specific odor impacts would be evaluated and identified in the subsequent project-level
37 environmental analysis conducted for the CM2–CM11 restoration and enhancement actions.
38 Accordingly, the impact of exposure of sensitive receptors to potential odors would be less than
39 significant. No mitigation is required.

1 **Impact AQ-27: Generation of Cumulative Greenhouse Gas Emissions from Implementation of**
 2 **CM2–CM11**

3 **NEPA Effects:** CM2–CM11 implemented under Alternative 2B would result in local GHG emissions
 4 from construction equipment and vehicle exhaust, similar to Alternative 1A. Restoration activities
 5 with the greatest potential for emissions include those that break ground and require use of
 6 earthmoving equipment. The type of restoration action and related construction equipment use are
 7 shown in Table 22-47. Implementing CM2–CM11 would also affect long-term sequestration rates
 8 through land use changes, such as conversion of agricultural land to wetlands, inundation of peat
 9 soils, drainage of peat soils, and removal or planting of carbon-sequestering plants.

10 Without additional information on site-specific characteristics associated with each of the
 11 restoration components, a complete assessment of GHG flux from CM2–CM11 is currently not
 12 possible. The effect of carbon sequestration and CH₄ generation would vary by land use type, season,
 13 and chemical and biological characteristics; these effects would be evaluated and identified in the
 14 subsequent project-level environmental analysis conducted for the CM2–CM11 restoration and
 15 enhancement actions. Mitigation Measures AQ-18 and AQ-19 would be available to reduce this
 16 effect. However, due to the potential for increases in GHG emissions from construction and land use
 17 change, this effect would be adverse.

18 **CEQA Conclusion:** The restoration and enhancement actions under Alternative 2B could result in a
 19 significant impact if activities are inconsistent with applicable GHG reduction plans, do not
 20 contribute to a lower carbon future, or generate excessive emissions, relative to other projects
 21 throughout the state. These effects are expected to be further evaluated and identified in the
 22 subsequent project-level environmental analysis conducted for the CM2–CM11 restoration and
 23 enhancement actions. Mitigation Measures AQ-24 and AQ-27 would be available to reduce this
 24 impact, but may not be sufficient to reduce to a less-than-significant level. Consequently, this impact
 25 would be significant and unavoidable.

26 **Mitigation Measure AQ-24: Develop an Air Quality Mitigation Plan (AQMP) to Ensure Air**
 27 **District Regulations and Recommended Mitigation are Incorporated into Future**
 28 **Conservation Measures and Associated Project Activities**

29 Please see Mitigation Measure AQ-24 under Impact AQ-24 in the discussion of Alternative 1A.

30 **Mitigation Measure AQ-27: Prepare a Land Use Sequestration Analysis to Quantify and**
 31 **Mitigate (as Needed) GHG Flux Associated with Conservation Measures and Associated**
 32 **Project Activities**

33 Please see Mitigation Measure AQ-27 under Impact AQ-27 in the discussion of Alternative 1A.

34 **22.3.3.7 Alternative 2C—Dual Conveyance with West Alignment Intakes**
 35 **W1–W5 (15,000 cfs; Operational Scenario B)**

36 A total of five intakes would be constructed under Alternative 2C. They would be sited on the west
 37 bank of the Sacramento River, opposite the locations identified for the pipeline/tunnel and east
 38 alignments. Under this alternative, water would be carried south in a canal along the western side of
 39 the Delta to an intermediate pumping plant and then pumped through a tunnel to a continuing canal
 40 to the proposed Byron Tract Forebay immediately northwest of Clifton Court Forebay (Figures 3-6

1 and 3-7 in Chapter 3, *Description of Alternatives*). The severity and location of effects are anticipated
2 to be similar to Alternative 1C.

3 Construction and operation of Alternative 2C would require the use of electricity, which would be
4 supplied by the California electrical grid. Power plants located throughout the state supply the grid
5 with power, which will be distributed to the Study area to meet project demand. Power supplied by
6 statewide power plants will generate criteria pollutants. Because these power plants are located
7 throughout the state, criteria pollutant emissions associated with Alternative 2C electricity demand
8 cannot be ascribed to a specific air basin or air district within the Study area. Criteria pollutant
9 emissions from electricity consumption are therefore provided for informational purposes only and
10 are not included in the impact conclusion.

11 Electricity demand for construction of Alternative 2C would be to equal demand required for
12 Alternative 1C. Electricity emissions generated by Alternative 1C would therefore be representative
13 of emissions generated by Alternative 2C. Refer to Table 22-58 for a summary of electricity-related
14 criteria pollutants during construction (years 2016 through 2029) of Alternative 1C that are
15 applicable to this alternative. Operational emissions would be different from Alternative 1C and are
16 provided in Table 22-80.

17 **Table 22-80. Criteria Pollutant Emissions from Electricity Consumption: Net Project Operations,**
18 **Alternative 2C (tons/year)^{a,b}**

Year	Analysis	ROG	CO	NO _x	PM10	PM2.5 ^c	SO ₂
ELT	CEQA	1	8	111	9	9	47
LLT	NEPA	2	14	198	17	17	84
LLT	CEQA	0	2	33	3	3	14

NEPA = Compares criteria pollutant emissions after implementation of Alternative 2C to the No Action Alternative.

CEQA = Compares criteria pollutant emissions after implementation of Alternative 2C to Existing Conditions.

^a Emissions assume implementation of RPS (see Appendix 22A, *Air Quality Analysis Methodology*). Power plants that generate electricity for the proposed project would be subject to local air district permitting requirements, including standards to implement BACT to reduce criteria pollutant emissions.

^b Because GHG emissions are cumulative (see Section 22.3.2.1) and not evaluated at the local air basin or air district level, they are discussed in Impacts AQ-21 and AQ-22. The GHG analysis for SWP power utilizes actual and forecasted GHG emissions rates for the SWP system, which differs slightly from the above analysis. Statewide grid average emission factors were utilized for the above analysis as criteria pollutant emission factors for SWP were unavailable. Please also note that the above analysis does not account for additional renewable energy that will be procured through modifications to DWR's REPP (see Impact AQ-22). Accordingly, the emissions results presented above represent a conservative assessment of potential criteria pollutant emissions.

^c Emission factors for PM2.5 are currently unavailable. Consequently, PM2.5 emissions were assumed to equal PM10 emissions. Because PM2.5 represents a fraction of PM10, this approach represents a conservative assessment of PM2.5 emissions from electricity consumption.

19
20 Alternative 2C would comprise physical/structural components similar to those under Alternative
21 1C, but would entail an operable barrier along the San Joaquin separate fish movement corridor at
22 the upstream confluence of Old River and the San Joaquin River (head of Old River). Emissions
23 generated by construction of all features other than the head of Old River barrier under Alternative
24 1C would be representative of emissions generated by Alternative 2C (refer to Table 22-48).

25 The head of Old River barrier would be constructed within the SJVAPCD between 2022 and 2024.
26 This would be the only feature constructed within the SJVAPCD under Alternative 2B. Emissions

1 associated with construction are shown in Table 22-81. Exceedances of the air district thresholds
2 are shown in underlined text.

3 **Table 22-81. Criteria Pollutant Emissions from Construction of Alternative 2C within the SJVAPCD**
4 **(tons/year)**

Year	ROG	NO _x	CO	PM10			PM2.5			SO ₂
				Exhaust	Dust	Total	Exhaust	Dust	Total	
2016	0	0	0	0	0	0	0	0	0	0
2017	0	0	0	0	0	0	0	0	0	0
2018	0	0	0	0	0	0	0	0	0	0
2019	0	0	0	0	0	0	0	0	0	0
2020	0	0	0	0	0	0	0	0	0	0
2021	0	0	0	0	0	0	0	0	0	0
2022	<1	3	4	<1	<1	<1	<1	<1	<1	<1
2023	<1	3	3	<1	<1	<1	<1	<1	<1	<1
2024	<1	2	2	<1	<1	<1	<1	<1	<1	<1
2025	0	0	0	0	0	0	0	0	0	0
2026	0	0	0	0	0	0	0	0	0	0
2027	0	0	0	0	0	0	0	0	0	0
2028	0	0	0	0	0	0	0	0	0	0
2029	0	0	0	0	0	0	0	0	0	0
Thresholds	10	10	-	-	-	15	-	-	15	-

5

6 Daily operation and maintenance activities under Alternative 2C would be the same as those
7 generated under Alternative 1C (see Table 22-49). Yearly maintenance would be similar to those
8 under Alternative 1C, but would also include annual inspections and sediment removal at the
9 operable barrier in San Joaquin County. Table 22-82 summarizes annual criteria pollutant emissions
10 associated with operation of Alternative 2C in the SJVAPCD.

11 **Table 22-82. Criteria Pollutant Emissions from Operation of Alternative 2C in SJVAPCD (pounds per**
12 **day and tons per year)**

Condition	San Joaquin Valley Air Pollution Control District					
	ROG	NO _x	CO	PM10	PM2.5	SO ₂
ELT	<0.01	<0.01	0.01	0.01	<0.01	<0.01
LLT	<0.01	<0.01	0.01	0.01	<0.01	<0.01
<i>Thresholds</i>	<i>10</i>	<i>10</i>	<i>-</i>	<i>15</i>	<i>15</i>	<i>-</i>

13

14 **Impact AQ-1: Generation of Criteria Pollutants in Excess of the SMAQMD Regional Thresholds**
15 **during Construction of the Proposed Water Conveyance Facility**

16 **NEPA Effects:** Construction activity required for Alternative 2C was assumed to equal activity
17 required for Alternative 1C. Emissions generated by Alternative 1C would therefore be
18 representative of emissions generated by Alternative 2C. As shown in Table 22-48, emissions would

1 exceed SMAQMD's daily NO_x threshold, even with implementation of environmental commitments
 2 (see Appendix 3B, *Environmental Commitments*). Since NO_x is a precursor to ozone and PM,
 3 exceedances of SMAQMD's daily NO_x threshold could impact both regional ozone and PM formation,
 4 which could worsen regional air quality and air basin attainment of the NAAQS and CAAQS.

5 While equipment could operate at any work area identified for this alternative, the highest level of
 6 NO_x and fugitive dust emissions in the SMAQMD are expected to occur at those sites where the
 7 duration and intensity of construction activities would be greatest. See the discussion of Impact AQ-
 8 2 under Alternative 1C.

9 Environmental commitments will reduce construction-related emissions; however, as shown in
 10 Table 22-48, NO_x emissions would still exceed the air district threshold identified in Table 22-8 and
 11 would result in an adverse effect to air quality. Mitigation Measures AQ-1a and AQ-1b would be
 12 available to reduce NO_x emissions, and would thus address regional effects related to secondary
 13 ozone and PM formation.

14 **CEQA Conclusion:** NO_x emissions generated during construction would exceed SMAQMD threshold
 15 identified in Table 22-8. Since NO_x is a precursor to ozone and PM, exceedances of SMAQMD's daily
 16 NO_x threshold could impact both regional ozone and PM formation. SMAQMD's regional emissions
 17 thresholds (Table 22-8) have been adopted to ensure projects do not hinder attainment of the
 18 CAAQS or NAAQS. The impact of generating NO_x emissions in excess of local air district thresholds
 19 would therefore violate applicable air quality standards in the Study area and could contribute to or
 20 worsen an existing air quality conditions. This would be a significant impact. Mitigation Measures
 21 AQ-1a and AQ-1b would be available to reduce NO_x emissions to a less-than-significant level by
 22 offsetting emissions to quantities below SMAQMD CEQA thresholds (see Table 22-8).

23 **Mitigation Measure AQ-1a: Mitigate and Offset Construction-Generated Criteria Pollutant**
 24 **Emissions within the SFNA to Net Zero (0) for Emissions in Excess of General Conformity**
 25 ***De Minimis* Thresholds (Where Applicable) and to Quantities below Applicable CEQA**
 26 **Thresholds for Other Pollutants**

27 Please see Mitigation Measure AQ-1a under Impact AQ-1 in the discussion of Alternative 1A.

28 **Mitigation Measure AQ-1b: Develop an Alternative or Complementary Offsite Mitigation**
 29 **Program to Mitigate and Offset Construction-Generated Criteria Pollutant Emissions**
 30 **within the SFNA to Net Zero (0) for Emissions in Excess of General Conformity *De Minimis***
 31 **Thresholds (Where Applicable) and to Quantities below Applicable CEQA Thresholds for**
 32 **Other Pollutants**

33 Please see Mitigation Measure AQ-1b under Impact AQ-1 in the discussion of Alternative 1A.

34 **Impact AQ-2: Generation of Criteria Pollutants in Excess of the YSAQMD Regional Thresholds**
 35 **during Construction of the Proposed Water Conveyance Facility**

36 **NEPA Effects:** Construction activity required for Alternative 2C within the YSAQMD was assumed to
 37 equal activity required for Alternative 1C. Emissions generated by Alternative 1C would therefore be
 38 representative of emissions generated by Alternative 2C. As shown in Table 22-48, emissions would
 39 exceed YSAQMD's ROG, NO_x, and PM10 thresholds, even with implementation of environmental
 40 commitments (see Appendix 3B, *Environmental Commitments*).

1 Since ROG and NO_x are precursors to ozone and PM, exceedances of SMAQMD's daily ROG and NO_x
 2 threshold could impact both regional ozone and PM formation, which could worsen regional air
 3 quality and air basin attainment of the NAAQS and CAAQS. Similarly, exceedances of YSAQMD's
 4 PM10 threshold could impede attainment of the NAAQS and CAAQS for PM10.

5 Environmental commitments outlined in Appendix 3B, *Environmental Commitments*, will reduce
 6 construction-related emissions; however, as shown in Table 22-48, ROG, NO_x, and PM10 emissions
 7 would still exceed the applicable YSAQMD thresholds identified in Table 22-8 and result in an
 8 adverse regional effect to air quality. Mitigation Measures AQ-1a and AQ-1b are available to reduce
 9 ROG, NO_x, and PM10 emissions, and would thus address regional effects related to secondary ozone
 10 and PM formation.

11 **CEQA Conclusion:** Emissions of ROG, NO_x, and PM10 generated during construction would exceed
 12 YSAQMD's regional thresholds identified in Table 22-8. Since ROG and NO_x are precursors to ozone
 13 and PM, exceedances of SMAQMD's daily ROG and NO_x threshold could impact both regional ozone
 14 and PM formation, which could worsen regional air quality and air basin attainment of the NAAQS
 15 and CAAQS. Similarly, exceedances of YSAQMD's PM10 threshold could impede attainment of the
 16 NAAQS and CAAQS for PM10. YSAQMD's regional emissions thresholds (Table 22-8) have been
 17 adopted to ensure projects do not hinder attainment of the CAAQS or NAAQS. The impact of
 18 generating ROG, NO_x, and PM10 in excess of local air district regional thresholds would therefore
 19 violate applicable air quality standards in the study area and could contribute to or worsen an
 20 existing air quality conditions. This would be a significant impact. Mitigation Measures AQ-1a and
 21 AQ-1b would be available to reduce ROG, NO_x, and PM10 emissions to a less-than-significant level by
 22 offsetting emissions to quantities below YSAQMD CEQA thresholds (see Table 22-8).

23 **Mitigation Measure AQ-1a: Mitigate and Offset Construction-Generated Criteria Pollutant**
 24 **Emissions within the SFNA to Net Zero (0) for Emissions in Excess of General Conformity**
 25 ***De Minimis* Thresholds (Where Applicable) and to Quantities below Applicable CEQA**
 26 **Thresholds for Other Pollutants**

27 Please see Mitigation Measure AQ-1a under Impact AQ-1 in the discussion of Alternative 1A.

28 **Mitigation Measure AQ-1b: Develop an Alternative or Complementary Offsite Mitigation**
 29 **Program to Mitigate and Offset Construction-Generated Criteria Pollutant Emissions**
 30 **within the SFNA to Net Zero (0) for Emissions in Excess of General Conformity *De Minimis***
 31 **Thresholds (Where Applicable) and to Quantities below Applicable CEQA Thresholds for**
 32 **Other Pollutants**

33 Please see Mitigation Measure AQ-1b under Impact AQ-1 in the discussion of Alternative 1A.

34 **Impact AQ-3: Generation of Criteria Pollutants in Excess of the BAAQMD Regional Thresholds**
 35 **during Construction of the Proposed Water Conveyance Facility**

36 **NEPA Effects:** Construction activity required for Alternative 2C was assumed to equal activity
 37 required for Alternative 1C. Emissions generated by Alternative 1C would therefore be
 38 representative of emissions generated by Alternative 2C. As shown in Table 22-48, construction
 39 emissions would exceed BAAQMD's daily ROG and NO_x thresholds, even with implementation of
 40 environmental commitments. All other pollutants would be below air district thresholds and
 41 therefore would not result in an adverse air quality effect.

1 Since ROG and NO_x are precursors to ozone and NO_x is a precursor to PM, exceedances of BAAQMD's
 2 ROG and NO_x thresholds could impact both regional ozone and PM formation, which could worsen
 3 regional air quality and air basin attainment of the NAAQS and CAAQS.

4 While equipment could operate at any work area identified for this alternative, the highest level of
 5 ROG and NO_x emissions in the BAAQMD are expected to occur at those sites where the duration and
 6 intensity of construction activities would be greatest, including the site of the Byron Tract Forebay
 7 adjacent to and south of Clifton Court Forebay.

8 Environmental commitments outlined in Appendix 3B, *Environmental Commitments*, will reduce
 9 construction-related emissions; however, as shown in Table 22-48, ROG and NO_x emissions would
 10 still exceed the applicable air district thresholds identified in Table 22-8 and result in an adverse
 11 effect to air quality. Although Mitigation Measures AQ-3a and AQ-3b would reduce ROG and NO_x,
 12 given the magnitude of estimated emissions, neither measure would reduce emissions below district
 13 thresholds.³⁵ Accordingly, this effect would be adverse.

14 **CEQA Conclusion:** Emissions of ROG and NO_x precursors generated during construction would
 15 exceed BAAQMD regional thresholds identified in Table 22-8. Since ROG and NO_x are precursors to
 16 ozone and NO_x is a precursor to PM, exceedances of BAAQMD's ROG and NO_x thresholds could
 17 impact both regional ozone and PM formation. BAAQMD's regional emissions thresholds (Table 22-
 18 8) have been adopted to ensure projects do not hinder attainment of the CAAQS or NAAQS. The
 19 impact of generating emissions in excess of BAAQMD thresholds would therefore violate applicable
 20 air quality standards in the Study area and could contribute to or worsen an existing air quality
 21 conditions. Although Mitigation Measures AQ-3a and AQ-3b would reduce ROG and NO_x, given the
 22 magnitude of estimated emissions, neither measure would reduce emissions below district
 23 thresholds. Accordingly, this impact would be significant and unavoidable.

24 **Mitigation Measure AQ-3a: Mitigate and Offset Construction-Generated Criteria Pollutant**
 25 **Emissions within BAAQMD/SFBAAB to Net Zero (0) for Emissions in Excess of General**
 26 **Conformity *De Minimis* Thresholds (Where Applicable) and to Quantities below**
 27 **Applicable BAAQMD CEQA Thresholds for Other Pollutants**

28 Please see Mitigation Measure AQ-3a under Impact AQ-3 in the discussion of Alternative 1A.

29 **Mitigation Measure AQ-3b: Develop an Alternative or Complementary Offsite Mitigation**
 30 **Program to Mitigate and Offset Construction-Generated Criteria Pollutant Emissions**
 31 **within the BAAQMD/SFBAAB to Net Zero (0) for Emissions in Excess of General**
 32 **Conformity *De Minimis* Thresholds (Where Applicable) and to Quantities below**
 33 **Applicable BAAQMD CEQA Thresholds for Other Pollutants**

34 Please see Mitigation Measure AQ-3b under Impact AQ-3 in the discussion of Alternative 1A.

³⁵ The amount of moneys required to achieve sufficient contracts to reduce project emissions below air district thresholds would require immediate and substantial outreach, staffing, and other resources. There are also a number of hurdles related to accelerating equipment turnover and identifying available projects. While the mitigation measure will reduce project emissions, it is unlikely sufficient resources can be identified to reduce emissions by the amount required to achieve a less-than-significant finding.

1 **Impact AQ-4: Generation of Criteria Pollutants in Excess of the SJVAPCD Regional Thresholds**
 2 **during Construction of the Proposed Water Conveyance Facility**

3 *NEPA Effects:* As shown in Table 22-81, construction emissions would not exceed SJVAPCD's annual
 4 thresholds. Accordingly, there would be no adverse air quality effect.

5 *CEQA Conclusion:* Construction emissions would not exceed SJVAPCD's annual thresholds.
 6 Accordingly, this impact would be less than significant.

7 **Impact AQ-6: Generation of Criteria Pollutants in Excess of the SMAQMD Regional Thresholds**
 8 **from Operation and Maintenance of the Proposed Water Conveyance Facility**

9 *NEPA Effects:* Operations and maintenance activities in SMAQMD required for Alternative 2C were
 10 assumed to equal activities required for Alternative 1C. Emissions generated by Alternative 1C
 11 would therefore be representative of emissions generated by Alternative 2C. As shown in Table 22-
 12 49, emissions would not exceed SMAQMD's regional thresholds of significance and there would be
 13 no adverse effect. See the discussion of Impact AQ-5 under Alternative 1C.

14 *CEQA Conclusion:* Emissions generated during operation and maintenance activities would not
 15 exceed SMAQMD regional thresholds for criteria pollutants. SMAQMD's regional emissions
 16 thresholds (Table 22-8) have been adopted to ensure projects do not hinder attainment of the
 17 CAAQS or NAAQS. The impact of generating emissions in excess of local air district would therefore
 18 violate applicable air quality standards in the Study area and could contribute to or worsen an
 19 existing air quality conditions. Because project operations would not exceed SMAQMD regional
 20 thresholds, the impact would be less than significant. No mitigation is required.

21 **Impact AQ-6: Generation of Criteria Pollutants in Excess of the YSAQMD Regional Thresholds**
 22 **from Operation and Maintenance of the Proposed Water Conveyance Facility**

23 *NEPA Effects:* Operations and maintenance activities in YSAQMD required for Alternative 2C were
 24 assumed to equal activities required for Alternative 1C. Emissions generated by Alternative 1C
 25 would therefore be representative of emissions generated by Alternative 2C. As shown in Table 22-
 26 49, emissions would not exceed YSAQMD's regional thresholds of significance and there would be no
 27 adverse effect. See the discussion of Impact AQ-6 under Alternative 1C.

28 *CEQA Conclusion:* Emissions generated during operation and maintenance activities would not
 29 exceed YSAQMD's regional thresholds for criteria pollutants. YSAQMD's regional emissions
 30 thresholds (Table 22-8) have been adopted to ensure projects do not hinder attainment of the
 31 CAAQS. Projects that do not violate YSAQMD's regional thresholds will therefore not conflict with
 32 local, state, and federal efforts to improve regional air quality in the SFNA. The impact would be less
 33 than significant. No mitigation is required.

34 **Impact AQ-7: Generation of Criteria Pollutants in Excess of the BAAQMD Regional Thresholds**
 35 **from Operation and Maintenance of the Proposed Water Conveyance Facility**

36 *NEPA Effects:* Operations and maintenance activities in BAAQMD required for Alternative 2C were
 37 assumed to equal activities required for Alternative 1C. Emissions generated by Alternative 1C
 38 would therefore be representative of emissions generated by Alternative 2C. As shown in Table 22-
 39 49, emissions would not exceed BAAQMD's regional thresholds of significance and there would be
 40 no adverse effect. See the discussion of Impact AQ-7 under Alternative 1C.

1 **CEQA Conclusion:** Emissions generated during operation and maintenance activities would not
 2 exceed BAAQMD regional thresholds for criteria pollutants. BAAQMD's regional emissions
 3 thresholds (Table 22-8) have been adopted to ensure projects do not hinder attainment of the
 4 CAAQS or NAAQS. The impact of generating emissions in excess of local air district thresholds would
 5 violate applicable air quality standards in the Study area and could contribute to or worsen an
 6 existing air quality conditions. Because project operations would not exceed BAAQMD regional
 7 thresholds, the impact would be less than significant. No mitigation is required.

8 **Impact AQ-8: Generation of Criteria Pollutants in Excess of the SJVAPCD Regional Thresholds**
 9 **from Operation and Maintenance of the Proposed Water Conveyance Facility**

10 **NEPA Effects:** Operations and maintenance in SJVAPCD include annual inspections and sediment
 11 removal (see Appendix 22A, *Air Quality Analysis Methodology*, for additional detail). The highest
 12 concentration of operational emissions in the SJVAPCD is expected at routine inspection sites along
 13 the west canal alignment and at the operable barrier. As shown in Table 22-82, operation and
 14 maintenance activities under Alternative 2C would not exceed SJVAPCD's regional thresholds of
 15 significance (see Table 22-8). Accordingly, project operations would not contribute to or worsen
 16 existing air quality violations. There would be no adverse effect.

17 **CEQA Conclusion:** Operational emissions generated by the alternative would not exceed SJVAPCD's
 18 regional thresholds of significance. SJVAPCD's regional emissions thresholds (Table 22-8) have been
 19 adopted to ensure projects do not hinder attainment of the CAAQS or NAAQS. Projects that do not
 20 violate SJVAPCD regional thresholds will therefore not conflict with local, state, and federal efforts to
 21 improve regional air quality in the SJVAB. This impact would be less than significant. No mitigation
 22 is required.

23 **Impact AQ-9: Exposure of Sensitive Receptors to Health Hazards from Localized Particulate**
 24 **Matter in Excess of SMAQMD's Health-Based Concentration Thresholds**

25 **NEPA Effects:** Construction activity required for Alternative 2C within the SMAQMD was assumed to
 26 equal activity required for Alternative 1C. Emissions and associated health risks from exposure to
 27 localized PM under Alternative 1C would therefore be representative of emissions and health risks
 28 generated by Alternative 2C. As shown in Table 22-50, concentrations of annual PM10 and PM2.5
 29 would be below the SMAQMD's significance thresholds. However, concentrations of PM10 would
 30 exceed SMAQMD's 24-hour PM10 threshold, even with implementation of environmental
 31 commitments (see Appendix 3B, *Environmental Commitments*). Receptors exposed to PM10
 32 concentrations in excess of SMAQMD's threshold could experience increased risk for adverse human
 33 health effects. Mitigation Measure AQ-9 is available to address this effect.

34 **CEQA Conclusion:** Respirable particulates pose a human health hazard by bypassing the defenses
 35 within the mucous ciliary system and entering deep lung tissue. Construction of Alternative 2C
 36 would result in the short-term exposure of receptors to PM10 concentrations that exceed SMAQMD
 37 threshold. This would be a significant impact. Mitigation Measure AQ-9 outlines a tiered strategy to
 38 reduce PM10 concentrations and public exposure to a less-than-significant level.

39 **Mitigation Measure AQ-9: Implement Measures to Reduce Re-Entrained Road Dust and**
 40 **Receptor Exposure to PM2.5 and PM10**

41 Please see Mitigation Measure AQ-9 under Impact AQ-9 in the discussion of Alternative 1A.

1 **Impact AQ-10: Exposure of Sensitive Receptors to Health Hazards from Localized Particulate**
 2 **Matter in Excess of YSAQMD's Health-Based Concentration Thresholds**

3 *NEPA Effects:* Construction activity required for Alternative 2C within the YSAQMD was assumed to
 4 equal activity required for Alternative 1C. Emissions and associated health risks from exposure to
 5 localized PM under Alternative 1C would therefore be representative of emissions and health risks
 6 generated by Alternative 2C. As shown previously in Table 22-51, concentrations of particulate
 7 matter would not exceed YSAQMD's 24-hour and annual PM10 and PM2.5 thresholds and
 8 consequently would not result in an adverse effect to human health at the analyzed receptors.

9 *CEQA Conclusion:* Respirable particulates pose a human health hazard by bypassing the defenses
 10 within the mucous ciliary system and entering deep lung tissue. Construction of Alternative 2C
 11 would result in PM2.5 and PM10 concentrations at receptor locations that are below the significance
 12 thresholds established by the YSAQMD. As such, localized particulate matter concentrations at
 13 analyzed receptors would not result in significant human health impacts. No mitigation is required.

14 **Impact AQ-11: Exposure of Sensitive Receptors to Health Hazards from Localized Particulate**
 15 **Matter in Excess of BAAQMD's Health-Based Concentration Thresholds**

16 *NEPA Effects:* Construction activity required for Alternative 2C within the BAAQMD was assumed to
 17 equal activity required for Alternative 1C. Emissions and associated health risks from exposure to
 18 localized PM under Alternative 1C would therefore be representative of emissions and health risks
 19 generated by Alternative 2C. As shown in Table 22-52, concentrations of particulate matter would
 20 not exceed BAAQMD's annual PM2.5 threshold and consequently would not result in an adverse
 21 effect to human health.

22 *CEQA Conclusion:* Respirable particulates pose a human health hazard by bypassing the defenses
 23 within the mucous ciliary system and entering deep lung tissue. Construction of Alternative 2C
 24 would result in PM2.5 concentrations at receptor locations that are below the significance
 25 thresholds established by the BAAQMD. As such, localized particulate matter concentrations at
 26 analyzed receptors would not result in significant human health impacts. No mitigation is required.

27 **Impact AQ-12: Exposure of Sensitive Receptors to Health Hazards from Localized Particulate**
 28 **Matter in Excess of SJVAPCD's Health-Based Concentration Thresholds**

29 *NEPA Effects:* As described above, Alternative 2C includes construction of the Head of Old River
 30 Barrier. While emissions would be generated during construction of the barrier, they would not
 31 result in PM concentrations at adjacent receptor locations in excess of SJVAPCD thresholds.
 32 Accordingly, there would be no adverse effect.

33 *CEQA Conclusion:* Respirable particulates pose a human health hazard by bypassing the defenses
 34 within the mucous ciliary system and entering deep lung tissue. Construction of the Head of Old
 35 River Barrier would not result in PM concentrations at receptor in excess of SJVAPCD thresholds. As
 36 such, localized particulate matter concentrations at analyzed receptors would not result in
 37 significant human health impacts. No mitigation is required.

38 **Impact AQ-13: Exposure of Sensitive Receptors to Health Hazards from Localized Carbon**
 39 **Monoxide**

40 *NEPA Effects:* Construction activity required for Alternative 2C would be similar to activity required
 41 for Alternative 1C. Accordingly, the potential for Alternative 2C to result in CO hot-spots during

1 construction would be the same as Alternative 1C. Given that construction activities typically do not
 2 result in CO hot-spots, onsite concentrations must comply with OSHA standards, and CO levels
 3 dissipate as a function of distance, equipment-generated CO emissions (see Table 22-48) are not
 4 anticipated to result in adverse health hazards to sensitive receptors. Refer to Impact AQ-13 under
 5 Alternative 1C.

6 Traffic associated with construction may contribute to increase roadway congestion, which could
 7 lead to conditions conducive to CO hot-spot formation. As shown in Table 19-21, the highest peak
 8 hour traffic volumes under BPBGPP—11,863 vehicles per hour—would occur on westbound
 9 Interstate 80 between Suisun Valley Road and State Route 12. This is about half of the congested
 10 traffic volume modeled by BAAQMD (24,000 vehicles per hour) that would be needed to contribute
 11 to a localized CO hot-spot, and less than half of the traffic volume modeled by SMAQMD (31,600
 12 vehicles per hour). Accordingly, construction traffic is not anticipated to result in adverse health
 13 hazards to sensitive receptors.

14 **CEQA Conclusion:** Continuous engine exhaust may elevate localized CO concentrations. Receptors
 15 exposed to these CO “hot-spots” may have a greater likelihood of developing adverse health effects.
 16 Construction sites are less likely to result in localized CO hot-spots due to the nature of construction
 17 activities (Sacramento Metropolitan Air Quality Management District 2014), which normally utilize
 18 diesel-powered equipment for intermittent or short durations. Moreover, construction sites must
 19 comply with the OSHA CO exposure standards for onsite workers. Accordingly, given that
 20 construction activities typically do not result in CO hot-spots, onsite concentrations must comply
 21 with OSHA standards, and CO levels dissipate as a function of distance, equipment-generated CO
 22 emissions are not anticipated to result in significant health hazards to sensitive receptors. Similarly,
 23 peak-hour construction traffic on local roadways would not exceed BAAQMD’s or SMAQMD’s
 24 conservative screening criteria for the formation potential CO hot-spots. This impact would be less
 25 than significant. No mitigation is required.

26 **Impact AQ-14: Exposure of Sensitive Receptors to Health Hazards from Diesel Particulate** 27 **Matter in Excess of SMAQMD’s Chronic Non-Cancer and Cancer Risk Thresholds**

28 **NEPA Effects:** Construction activity required for Alternative 2C within the SMAQMD was assumed to
 29 equal activity required for Alternative 1C. Emissions and associated health risks from exposure to
 30 localized DPM under Alternative 1C would therefore be representative of emissions and health risks
 31 generated by Alternative 2C.

32 As shown in Table 22-53, Alternative 1C would not exceed the SMAQMD’s chronic non-cancer or
 33 cancer thresholds and, thus, would not expose sensitive receptors to substantial pollutant
 34 concentrations. Therefore, this alternative’s effect of exposure of sensitive receptors to DPM
 35 emissions and their health hazards during construction would not be adverse.

36 **CEQA Conclusion:** DPM generated during construction poses inhalation-related chronic non-cancer
 37 hazard and cancer risk if adjacent receptors are exposed to significant concentrations for prolonged
 38 durations. The health hazards resulting from DPM generated by Alternative 2C would not exceed the
 39 SMAQMD’s chronic non-cancer or cancer thresholds, and thus would not expose sensitive receptors
 40 to substantial pollutant concentrations. Therefore, this impact for DPM health hazards would be less
 41 than significant. No mitigation is required.

1 **Impact AQ-15: Exposure of Sensitive Receptors to Health Hazards from Diesel Particulate**
 2 **Matter in Excess of YSAQMD's Chronic Non-Cancer and Cancer Risk Thresholds**

3 **NEPA Effects:** Construction activity required for Alternative 2C within the YSAQMD was assumed to
 4 equal activity required for Alternative 1C. Emissions and associated health risks from exposure to
 5 localized DPM under Alternative 1C would therefore be representative of emissions and health risks
 6 generated by Alternative 2C. As shown in Table 22-54, Alternative 1C would not exceed the
 7 YSAQMD's chronic non-cancer or cancer thresholds and, thus, would not expose sensitive receptors
 8 to substantial pollutant concentrations. Therefore, this alternative's effect of exposure of sensitive
 9 receptors to DPM emissions and their health hazards during construction would not be adverse.

10 **CEQA Conclusion:** DPM generated during construction poses inhalation-related chronic non-cancer
 11 hazard and cancer risk if adjacent receptors are exposed to significant concentrations for prolonged
 12 durations. The health hazards resulting from DPM generated by Alternative 2C would not exceed the
 13 YSAQMD's chronic non-cancer or cancer thresholds, and thus would not expose sensitive receptors
 14 to substantial pollutant concentrations. Therefore, this impact for DPM health hazards would be less
 15 than significant. No mitigation is required.

16 **Impact AQ-16: Exposure of Sensitive Receptors to Health Hazards from Diesel Particulate**
 17 **Matter in Excess of BAAQMD's Chronic Non-Cancer and Cancer Risk Thresholds**

18 **NEPA Effects:** Construction activity required for Alternative 2C within the BAAQMD was assumed to
 19 equal activity required for Alternative 1C. Emissions and associated health risks from exposure to
 20 localized DPM under Alternative 1C would therefore be representative of emissions and health risks
 21 generated by Alternative 2C. As shown in Table 22-55, chronic risk would be below the BAAQMD's
 22 significance thresholds. However, cancer risk would exceed BAAQMD's cancer significance
 23 threshold, even with implementation of environmental commitments (see Appendix 3B,
 24 *Environmental Commitments*). Therefore, this alternative's effect of exposure of sensitive receptors
 25 to DPM-related health hazards during construction would be adverse.

26 Mitigation Measure AQ-16 would be available to reduce exposure to substantial cancer risk by
 27 relocating affected receptors. Although Mitigation Measure AQ-16 would reduce the severity of this
 28 effect, the BDCP proponents are not solely responsible for implementation of the measure. If a
 29 landowner chooses not to accept DWR's offer of relocation assistance, an adverse effect in the form
 30 excess cancer risk above air district thresholds would occur. Therefore, this effect would be adverse.
 31 If, however, all landowners accept DWR's offer of relocation assistance, effects would not be
 32 adverse.

33 **CEQA Conclusion:** DPM generated during construction poses inhalation-related chronic non-cancer
 34 hazard and cancer risk if adjacent receptors are exposed to significant concentrations for prolonged
 35 durations. The DPM generated during Alternative 2C construction would not exceed the BAAQMD's
 36 chronic non-cancer hazard and thus would not expose sensitive receptors to substantial health
 37 hazards for chronic exposure of DPM. However, the project emissions would result in exceedances
 38 of the BAAQMD's cancer risk threshold. Therefore, this impact for DPM emissions would be
 39 significant.

40 Mitigation Measure AQ-16 would be available to reduce exposure to substantial cancer risk by
 41 relocating affected receptors. Although Mitigation Measure AQ-16 would reduce the severity of this
 42 effect, the BDCP proponents are not solely responsible for implementation of the measure. If a
 43 landowner chooses not to accept DWR's offer of relocation assistance, a significant impact in the

1 form excess cancer risk above air district thresholds would occur. Therefore, this effect would be
 2 significant and unavoidable. If, however, all landowners accept DWR's offer of relocation assistance,
 3 the impact would be less than significant.

4 **Mitigation Measure AQ-16: Relocate Sensitive Receptors to Avoid Excess Cancer Risk**

5 Please see Mitigation Measure AQ-16 under Impact AQ-16 in the discussion of Alternative 1A.

6 **Impact AQ-17: Exposure of Sensitive Receptors to Health Hazards from Diesel Particulate** 7 **Matter in Excess of SJVAPCD's Chronic Non-Cancer and Cancer Risk Thresholds**

8 **NEPA Effects:** As described above, Alternative 2C includes construction of the Head of Old River
 9 Barrier. While emissions would be generated during construction of the barrier, they would not
 10 result in DPM concentrations at adjacent receptor locations in excess of SJVAPCD thresholds.
 11 Accordingly, there would be no adverse effect.

12 **CEQA Conclusion:** Construction of the Head of Old River Barrier would not result in DPM
 13 concentrations at receptor in excess of SJVAPCD thresholds. As such, construction-related DPM
 14 would not result in significant human health impacts. No mitigation is required.

15 **Impact AQ-18: Exposure of Sensitive Receptors to *Coccidioides immitis* (Valley Fever)**

16 **NEPA Effects:** As discussed under Alternative 1A, earthmoving activities during construction could
 17 release *C. immitis* spores if filaments are present and other soil chemistry and climatic conditions
 18 are conducive to spore development. Receptors adjacent to the construction area may therefore be
 19 exposed to increase risk of inhaling *C. immitis* spores and subsequent development of Valley Fever.
 20 Dust-control measures are the primary defense against infection (United States Geological Survey
 21 2000). Implementation of advanced air-district recommended fugitive dust controls outlined in
 22 Appendix 3B, *Environmental Commitments*, would avoid dusty conditions and reduce the risk of
 23 contracting Valley Fever through routine watering and other controls. Therefore, this alternative's
 24 effect of exposure of sensitive receptors to increased Valley Fever risk during construction would
 25 not be adverse.

26 **CEQA Conclusion:** Construction of the water conveyance facility would involve earthmoving
 27 activities that could release *C. immitis* spores if filaments are present and other soil chemistry and
 28 climatic conditions are conducive to spore development. Receptors adjacent to the construction area
 29 may therefore be exposed to increase risk of inhaling *C. immitis* spores and subsequent development
 30 of Valley Fever. Implementation of air-district recommended fugitive dust controls outlined in
 31 Appendix 3B, *Environmental Commitments*, would avoid dusty conditions and reduce the risk of
 32 contracting Valley Fever through routine watering and other controls. Therefore, this impact would
 33 be less than significant. No mitigation is required.

34 **Impact AQ-19: Creation of Potential Odors Affecting a Substantial Number of People during** 35 **Construction or Operation of the Proposed Water Conveyance Facility**

36 **NEPA Effects:** As discussed under Alternative 1A, odors from construction activities would be
 37 localized and generally confined to the immediate area surrounding the construction site. Moreover,
 38 odors would be temporary and localized, and they would cease once construction activities have
 39 been completed. Thus, it is not anticipated that construction of CM1 would create objectionable
 40 odors from construction equipment or asphalt paving.

1 Construction of the water conveyance facility would require removal of subsurface material during
2 tunnel excavation and sediment removal. As discussed under Alternative 1A, geotechnical tests
3 indicate that VOC levels in Plan Area soils are below the method detection limits, indicating that
4 organic decay of exposed RTM and sediment will be relatively low (URS 2014). Moreover, drying
5 and stockpiling of the removed RTM and sediment will occur under aerobic conditions, which will
6 further limit any potential decomposition and associated malodorous products. Accordingly, it is not
7 anticipated that tunnel and sediment excavation would create objectionable odors.

8 Typical facilities known to produce odors include landfills, wastewater treatment plants, food
9 processing facilities, and certain agricultural activities. Alternative 2C would not result in the
10 addition of facilities associated with odors, and as such, long-term operation of the water
11 conveyance facility would not result in objectionable odors.

12 **CEQA Conclusion:** Alternative 2C would not result in the addition of major odor producing facilities.
13 Diesel emissions during construction could generate temporary odors, but these would quickly
14 dissipate and cease once construction is completed. Likewise, potential odors generated during
15 asphalt paving would be addressed through mandatory compliance with air district rules and
16 regulations. While tunnel excavation would unearth substantial quantities of RTM, geotechnical
17 tests indicate that soils in the Plan Area have relatively low organic constituents. Moreover, drying
18 and stockpiling of the removed RTM will occur under aerobic conditions, which will further limit
19 any potential decomposition and associated malodorous products. Accordingly, the impact of
20 exposure of sensitive receptors to potential odors during construction would be less than
21 significant. No mitigation is required.

22 **Impact AQ-20: Generation of Criteria Pollutants in the Excess of Federal *De Minimis*** 23 **Thresholds from Construction and Operation and Maintenance of the Proposed Water** 24 **Conveyance Facility**

25 **NEPA Effects:** As discussed above, emissions generated by Alternative 1C within the SFNA and
26 SFBAAB would be representative of emissions generated by Alternative 2C (refer to Table 22-56).
27 Due to the operable barrier at head of Old River, a minor amount of emissions would be generated in
28 the SJVAB under Alternative 2C. These emissions would be generated during the last three years of
29 construction and are presented in Table 22-83. Exceedances of the federal *de minimis* thresholds are
30 shown in underlined text.

1 **Table 22-83. Criteria Pollutant Emissions from Construction and Operation of Alternative 2C in**
 2 **Nonattainment and Maintenance Areas of the SJVAB (tons/year)**

Year	ROG	NO _x ^a	CO ^b	PM10	PM2.5	SO ₂
2016	0	0	0	0	0	0
2017	0	0	0	0	0	0
2018	0	0	0	0	0	0
2019	0	0	0	0	0	0
2020	0	0	0	0	0	0
2021	0	0	0	0	0	0
2022	<1	3	0	<1	<1	<1
2023	<1	3	0	<1	<1	<1
2024	<1	2	0	<1	<1	<1
2025	0	0	0	0	0	0
2026	0	0	0	0	0	0
2027	0	0	0	0	0	0
2028	0	0	0	0	0	0
2029	0	0	0	0	0	0
ELT	<0.01	<0.01	0.01	0.01	<0.01	<0.01
LLT	<0.01	<0.01	0.01	0.01	<0.01	<0.01
<i>De Minimis</i>	10	10	100	100	100	100

^a NO_x emissions in excess of 100 tons per year within federally designated PM10 and PM2.5 nonattainment or maintenance areas trigger a secondary PM10 and PM2.5 precursor threshold. NO_x emissions in excess of this secondary threshold could conflict with the applicable PM10 and PM2.5 SIPs. Accordingly, NO_x offsets pursued for the purposes of general conformity for those years in which NO_x emissions exceed 100 tons must occur within the federally designated PM2.5 nonattainment and PM10 maintenance areas, as applicable.

^b The proposed water conveyance facility is located within a federally designated CO attainment area. Accordingly, CO emissions generated by construction of CM1 are not subject to the General Conformity Rule and are excluded from the emissions summary and general conformity analysis (40 CFR Part 51 and 93, Section III.A). Emissions presented in the table are limited those generated by haul trucks, which would occur in federally designated CO maintenance area.

3

4 **Sacramento Federal Nonattainment Area**

5 As shown in Table 22-56, implementation of Alternative 1C (and thus Alternative 2C) would exceed
 6 the following SFNA federal *de minimis* thresholds:

- 7 ● ROG: 2019–2025
- 8 ● NO_x: 2018–2028

9 ROG and NO_x are precursors to ozone and NO_x is a precursor to PM, for which the SFNA is in
 10 nonattainment for the NAAQS. Since project emissions exceed the federal *de minimis* thresholds for
 11 ROG and NO_x, a general conformity determination must be made to demonstrate that total direct
 12 and indirect emissions of ROG and NO_x would conform to the appropriate SFNA SIP for each year of
 13 construction in which the *de minimis* thresholds are exceeded.

1 NO_x is also a precursor to PM and can contribute to PM formation. As discussed above, Sacramento
 2 County is currently designated maintenance for the PM₁₀ NAAQS and portions of the SVAB are
 3 designated nonattainment for the PM_{2.5} NAAQS. NO_x emissions in excess of 100 tons per year in
 4 Sacramento County trigger a secondary PM₁₀ precursor threshold, whereas NO_x emissions in excess
 5 of 100 tons per year in the SVAB trigger a secondary PM_{2.5} precursor threshold. Since NO_x
 6 emissions can contribute to PM formation, NO_x emissions in excess of these secondary precursor
 7 thresholds could conflict with the applicable PM₁₀ and PM_{2.5} SIPs. Accordingly, NO_x offsets pursued
 8 for the purposes of general conformity for those years in which NO_x emissions exceed 100 tons must
 9 occur within the federally designated PM_{2.5} nonattainment and PM₁₀ maintenance areas of the
 10 SVAB.

11 As shown in Table 22-48, NO_x emissions generated by construction activities in SMAQMD
 12 (Sacramento County) would not exceed 100 tons per year. Accordingly, the project does not trigger
 13 the secondary PM₁₀ precursor threshold. As shown in Table 22-56, NO_x emissions in 2019 through
 14 2027 would exceed 100 tons year in the SFNA. The project therefore triggers the secondary PM_{2.5}
 15 precursor threshold, requiring all NO_x offsets for 2019 through 2027 to occur within the federally
 16 designated PM_{2.5} nonattainment area within the SFNA. The nonattainment boundary for PM_{2.5}
 17 includes all of Sacramento County and portions of Yolo, El Dorado, Solano, and Placer counties.

18 The federal lead agencies (Reclamation, USFWS, and NMFS) demonstrate that project emissions
 19 would not result in a net increase in regional NO_x emissions, as construction-related NO_x would be
 20 fully offset to zero through implementation of Mitigation Measures AQ-1a and 1b, which require
 21 additional onsite mitigation and/or offsets. Mitigation Measures AQ-1a and 1b will ensure the
 22 requirements of the mitigation and offset program are implemented and conformity requirements
 23 for NO_x are met.

24 **Mitigation Measure AQ-1a: Mitigate and Offset Construction-Generated Criteria Pollutant**
 25 **Emissions within the SFNA to Net Zero (0) for Emissions in Excess of General Conformity**
 26 ***De Minimis* Thresholds (Where Applicable) and to Quantities below Applicable CEQA**
 27 **Thresholds for Other Pollutants**

28 Please see Mitigation Measure AQ-1a under Impact AQ-1 in the discussion of Alternative 1A.

29 **Mitigation Measure AQ-1b: Develop an Alternative or Complementary Offsite Mitigation**
 30 **Program to Mitigate and Offset Construction-Generated Criteria Pollutant Emissions**
 31 **within the SFNA to Net Zero (0) for Emissions in Excess of General Conformity *De Minimis***
 32 **Thresholds (Where Applicable) and to Quantities below Applicable CEQA Thresholds for**
 33 **Other Pollutants**

34 Please see Mitigation Measure AQ-1b under Impact AQ-1 in the discussion of Alternative 1A.

35 ***San Joaquin Valley Air Basin***

36 As shown in Table 22-83, emissions generated by construction of the head of Old River barrier
 37 would not exceed any of the SJVAB federal *de minimis* thresholds. Accordingly, a general conformity
 38 determination is not required as total direct and indirect emissions would conform to the
 39 appropriate SJVAB SIPs.

1 **San Francisco Bay Area Air Basin**

2 As shown in Table 22-56, implementation of Alternative 1C (and thus Alternative 2C) would exceed
3 the following SFBAAB federal *de minimis* thresholds:

- 4 • NO_x: 2019–2024

5 NO_x is a precursor to ozone, for which the SJVAB is in nonattainment for the NAAQS. Since project
6 emissions exceed the federal *de minimis* threshold for NO_x, a general conformity determination must
7 be made to demonstrate that total direct and indirect emissions of NO_x would conform to the
8 appropriate SJVAB SIP for each year of construction in which the *de minimis* thresholds are
9 exceeded.

10 NO_x is also a precursor to PM and can contribute to PM formation. As discussed above, the SFBAAB
11 is currently designated nonattainment for the PM_{2.5} NAAQS. NO_x emissions in excess of 100 tons
12 per year trigger a secondary PM precursor threshold, and could conflict with the applicable PM_{2.5}
13 SIP. Accordingly, NO_x offsets pursued for the purposes of general conformity for those years in
14 which NO_x emissions exceed 100 tons must occur within the federally designated PM_{2.5}
15 nonattainment area of the SFBAAB, which is consistent with the larger nonattainment boundary for
16 ozone.

17 Although Mitigation Measures AQ-3a and AQ-3b would reduce NO_x, given the magnitude of
18 emissions; neither measure could feasibly reduce emissions to net zero. This impact would be
19 adverse. In the event that Alternative 2C is selected as the APA, Reclamation, USFWS, and NMFS
20 would need to demonstrate that conformity is met for NO_x through a local air quality modeling
21 analysis (i.e., dispersion modeling) or other acceptable methods to ensure project emissions do not
22 cause or contribute to any new exceedances of the NAAQS or increase the frequency or severity of
23 any existing exceedances.

24 **Mitigation Measure AQ-3a: Mitigate and Offset Construction-Generated Criteria Pollutant**
25 **Emissions within the BAAQMD/SFBAAB to Net Zero (0) for Emissions in Excess of General**
26 **Conformity *De Minimis* Thresholds (Where Applicable) and to Quantities below**
27 **Applicable BAAQMD CEQA Thresholds for Other Pollutants**

28 Please see Mitigation Measure AQ-3a under Impact AQ-3 in the discussion of Alternative 1A.

29 **Mitigation Measure AQ-3b: Develop an Alternative or Complementary Offsite Mitigation**
30 **Program to Mitigate and Offset Construction-Generated Criteria Pollutant Emissions**
31 **within the BAAQMD/SFBAAB to Net Zero (0) for Emissions in Excess of General**
32 **Conformity *De Minimis* Thresholds (Where Applicable) and to Quantities below**
33 **Applicable BAAQMD CEQA Thresholds for Other Pollutants**

34 Please see Mitigation Measure AQ-3b under Impact AQ-3 in the discussion of Alternative 1A.

35 **CEQA Conclusion:** SFNA and SFBAAB are classified as nonattainment areas with regard to the ozone
36 NAAQS. The impact of increases in criteria pollutant emissions above the air basin *de minimis*
37 thresholds could conflict with or obstruct implementation of the applicable air quality plans. Since
38 construction emissions in the SFNA and SFBAAB would exceed the *de minimis* thresholds for ROG
39 (SFNA only) and NO_x, this impact would be significant.

40 Mitigation Measures AQ-1a and AQ-1b would ensure project emissions would not result in an
41 increase in regional ROG or NO_x emissions in the SFNA. These measures would therefore ensure

1 total direct and indirect ROG and NO_x emissions generated by the project in the SFNA would
 2 conform to the appropriate air basin SIPs by offsetting the action's emissions in the same or nearby
 3 area to net zero.

4 Although Mitigation Measures AQ-3a and AQ-3b would reduce NO_x in the SFBAAB, given the
 5 magnitude of emissions; neither measure could feasibly reduce emissions to net zero. This impact
 6 would be significant and unavoidable.

7 Emissions within the SJVAB would not exceed the federal de minimis thresholds and as such, the
 8 project would conform to the appropriate SJVAB SIPs.

9 **Impact AQ-21: Generation of Cumulative Greenhouse Gas Emissions during Construction of**
 10 **the Proposed Water Conveyance Facility**

11 *NEPA Effects:* GHG emissions generated by construction of Alternative 2C would be similar to
 12 emissions generated for Alternative 1C (see Table 22-57). However, because Alternative 2C includes
 13 an operable barrier at head of Old River, total emissions associated with Alternative 2C would be
 14 slightly higher than Alternative 1C due to additional equipment activity. Table 22-84 summarizes
 15 GHG emissions associated with Alternative 2C. Emissions with are presented with implementation
 16 of environmental commitments (see Appendix 3B, *Environmental Commitments*) and state mandates
 17 to reduce GHG emissions.

18 **Table 22-84. GHG Emissions from Construction of Alternative 2C (metric tons/year)^a**

Year	Equipment and Vehicles (CO ₂ e)	Electricity (CO ₂ e)	Concrete Batching (CO ₂)	Total CO ₂ e
2016	0	0	499	499
2017	0	0	0	0
2018	42,159	359	62,034	104,552
2019	142,951	2,009	9,744	154,704
2020	130,349	9,650	60,545	200,544
2021	156,016	25,692	120,086	301,794
2022	145,336	36,078	182,008	363,423
2023	170,765	32,117	177,701	380,583
2024	183,766	33,500	212,603	429,869
2025	95,161	22,599	141,966	259,726
2026	74,368	8,068	34,020	116,457
2027	64,634	1,541	49,062	115,237
2028	26,032	41	9,653	35,726
2029	0	1	0	1
<i>Total</i>	<i>1,231,537</i>	<i>171,656</i>	<i>1,059,921</i>	<i>2,463,113</i>

^a Emissions estimates do not account for GHG flux from land disturbance. Surface and subsurface (e.g., tunneling) activities may oxidize peat soils, releasing GHG emissions. However, recent geotechnical surveys indicated that peat is negligible below 80 feet of depth. The tunnel will be placed below this range and the design adjusted if peat soils are discovered. Peat material encountered during surface excavation for non-tunnel work will be covered with top soil to reduce oxidation when needed.

Values may not total correctly due to rounding.

19

Table 22-58 summarizes GHG emissions that would be generated in the BAAQMD, SMAQMD, and YSAQMD. The head of Old River barrier would be constructed within the SJVAPCD under Alternative 2A. Table 22-85 summarizes GHG emissions that would be generated in the SJVAPCD. The table does not include emissions from electricity generation as these emissions would be generated by power plants located throughout the state (see discussion preceding this impact analysis). GHG emissions presented in Tables 22-58 and 22-85 are therefore provided for information purposes only.

Table 22-85. GHG Emissions from Construction of Alternative 2C by Air District (metric tons/year)^a

Year	Equipment and Vehicles (CO ₂ e)	Concrete Batching (CO ₂) ^a	Total CO ₂ e ^b
SJVAPCD	2,375	0	2,375

^a Emissions assigned to each air district based on the number of batching plants located in that air district.
^b Values may not total correctly due to rounding.

As shown in Table 22-84, construction of Alternative 2C would generate a total of 2.5 million metric tons of GHG emissions. This is equivalent to adding 518,000 typical passenger vehicles to the road during construction (U.S. Environmental Protection Agency 2014e). As discussed in section 22.3.2, *Determination of Effects*, any increase in emissions above net zero associated with construction of the BDCP water conveyance features would be adverse. Accordingly, this effect would be adverse. Mitigation Measure AQ-21, which would develop a GHG Mitigation Program to reduce construction-related GHG emissions to net zero, is available address this effect.

CEQA Conclusion: Construction of Alternative 2C would generate a total of 2.5 million metric tons of GHG emissions. This is equivalent to adding 518,000 typical passenger vehicles to the road during construction (U.S. Environmental Protection Agency 2014e). As discussed in section 22.3.2, *Determination of Effects*, any increase in emissions above net zero associated with construction of the BDCP water conveyance features would be significant. Mitigation Measure AQ-21 would develop a GHG Mitigation Program to reduce construction-related GHG emissions to net zero. Accordingly, this impact would be less-than-significant with implementation of Mitigation Measure AQ-21

Mitigation Measure AQ-21: Develop and Implement a GHG Mitigation Program to Reduce Construction Related GHG Emissions to Net Zero (0)

Please see Mitigation Measure AQ-21 under Impact AQ-21 in the discussion of Alternative 1A.

Impact AQ-22: Generation of Cumulative Greenhouse Gas Emissions from Operation and Maintenance of the Proposed Water Conveyance Facility and Increased Pumping

NEPA Effects: Operation of Alternative 2C would generate direct and indirect GHG emissions. Sources of direct emissions include heavy-duty equipment, on road crew trucks, and employee vehicle traffic. Indirect emissions would be generated predominantly by electricity consumption required for pumping as well as, maintenance, lighting, and other activities.

Table 22-86 summarizes long-term operational GHG emissions associated with operations, maintenance, and increased SWP pumping. Emissions were quantified for both ELT and LLT conditions, although activities would take place annually until project decommissioning. Emissions include state mandates to reduce GHG emissions (described in Impact AQ-21) are presented (there are no BDCP specific operational environmental commitments). Total CO₂e emissions are compared to both the No Action Alternative (NEPA point of comparison) and Existing Conditions (CEQA

1 baseline). As discussed in Section 22.3.1.2, equipment emissions are assumed to be zero under both
 2 the No Action Alternative (NEPA point of comparison) and Existing Conditions (CEQA baseline). The
 3 equipment emissions presented in Table 22-86 are therefore representative of project impacts for
 4 both the NEPA and CEQA analysis.

5 **Table 22-86. GHG Emissions from Operation, Maintenance, and Increased SWP Pumping, Alternative**
 6 **2C (metric tons/year)**

Condition	Equipment CO ₂ e	Electricity CO ₂ e		Total CO ₂ e	
		NEPA Point of Comparison	CEQA Baseline	NEPA Point of Comparison	CEQA Baseline
ELT	530	-	111,309	-	111,839
LLT	517	25,489	4,852	26,006	5,369

Note: The *NEPA point of comparison* compares total CO₂e emissions after implementation of Alternative 2C to the No Action Alternative, whereas the *CEQA baseline* compares total CO₂e emissions to Existing Conditions.

7

8 Table 22-59 summarizes equipment CO₂e emissions that would be generated in the
 9 BAAQMD, SMAQMD, and YSAQMD. Table 22-87 summarizes equipment CO₂e associated with
 10 operational activities in SJVAPCD. The table does not include emissions from SWP pumping as these
 11 emissions would be generated by power plants located throughout the state (see discussion
 12 preceding this impact analysis). GHG emissions presented in Tables 22-58 and 22-86 are therefore
 13 provided for information purposes only.

14 **Table 22-87. Equipment CO₂e Emissions from Operation and Maintenance of Alternative 2C in**
 15 **SJVAPCD (metric tons/year)^a**

Air District	ELT	LLT
SJVAPCD	4	4

^a Emissions do not include emissions generated by increased SWP pumping.

16

17 SWP Operational and Maintenance GHG Emissions Analysis

18 Alternative 2C would add approximately 1,178 GWh³⁶ of additional net electricity demand to
 19 operation of the SWP each year assuming 2060 conditions. Conditions at 2060 (LLT) are used for
 20 this analysis because they yield the largest potential additional net electricity requirements and
 21 therefore represent the largest potential impact. This 1,178 GWh is based on assumptions of future
 22 conditions and operations and includes all additional energy required to operate the project with
 23 BDCP Alternative 2C including any additional energy associated with additional water being moved
 24 through the system.

³⁶ Estimated net energy demand differs slightly from what is presented in Chapter 21, *Energy*. This is because the above analysis includes energy needed for transmission and distribution of water along the Valley String, which is required to enable a comparison with the assumptions in DWR's CAP.

1 In the CAP, DWR developed estimates of historical, current, and future GHG emissions. Figure 22-13
2 shows those emissions as they were projected in the CAP and how those emissions projections
3 would change with the additional electricity demands needed to operate the SWP with the addition
4 of BDCP Alternative 2C. As shown in Figure 22-13, in 2024, the year BDCP Alternative 2C is
5 projected to go online, DWR total emissions jump from around 912,000 metric tons of CO₂e to over
6 1.4 million metric tons of CO₂e. This elevated level is approximately 160,000 metric tons of CO₂e
7 above DWR's designated GHG emissions reduction trajectory (red line, which is the linear
8 interpolation between DWR's 2020 GHG emissions goal and DWR's 2050 GHG emissions goal.) The
9 projection indicates that after the initial jump in emissions, existing GHG emissions reduction
10 measures would bring the elevated GHG emissions level back down below DWR's GHG emissions
11 reduction trajectory by 2037 and that DWR would still achieve its GHG emission reduction goal by
12 2050.

13 Because employing only DWR's existing GHG emissions reduction measures would result in a large
14 initial increase in emissions and result in DWR emissions exceeding the emissions reduction
15 trajectory for several years, DWR will take additional actions to reduce GHG emissions if BDCP
16 Alternative 2C is implemented.

17 The CAP sets forth DWR's plan to manage its activities and operations to achieve its GHG emissions
18 reduction goals. The CAP commits DWR to monitoring its emissions each year and evaluating its
19 emissions every five years to determine whether it is on a trajectory to achieve its GHG emissions
20 reduction goals. If it appears that DWR will not meet the GHG emission reduction goals established
21 in the plan, DWR may make adjustments to existing emissions reduction measures, devise new
22 measures to ensure achievement of the goals, or take other action. Given the scale of additional
23 emissions that BDCP Alternative 2C would add to DWR's total GHG emissions, DWR has evaluated
24 the most likely method that it would use to compensate for such an increase in GHG emissions:
25 modification of DWR's REPP. The DWR REPP (GHG emissions reduction measure OP-1 in the CAP)
26 describes the amount of additional renewable energy that DWR expects to purchase each year to
27 meet its GHG emissions reduction goals. The REPP lays out a long-term strategy for renewable
28 energy purchases, though actual purchases of renewable energy may not exactly follow the schedule
29 in the REPP and will ultimately be governed by actual operations, measured emissions, and
30 contracting.

31 Table 22-88 below shows how the REPP could be modified to accommodate BDCP Alternative 2C,
32 and shows that additional renewable energy resources could be purchased during years 2022–2025
33 over what was programmed in the original REPP. The net result of this change is that by 2026
34 DWR's energy portfolio would contain nearly 1,042 GWh of renewable energy (in addition to
35 hydropower generated at SWP facilities). This amount is considerably larger than the amount called
36 for in the original DWR REPP (1,112 compared to 792). In later years, 2031–2050, DWR would bring
37 on slightly fewer additional renewable resources than programmed in the original REPP. Figure 22-
38 14 shows how this modified Renewable Energy Procurement Plan would affect DWR's projected
39 future emissions with BDCP Alternative 2C.

1 **Table 22-88. Changes in Expected Renewable Energy Purchases 2011–2050 (Alternative 2C)**

Year(s)	Additional GWh of Renewable Power Purchased (Above previous year)	
	Original CAP	New CAP
2011–2020	36	36
2021	72	72
2022–2025	72	152
2026–2030	72	72
2031–2040	108	63
2041–2050	144	74
Total Cumulative	52,236	51,041

2
3 As shown in the analysis above and consistent with the analysis contained in the CAP and associated
4 Initial Study and Negative Declaration for the CAP, BDCP Alternative 2C would not adversely affect
5 DWR’s ability to achieve the GHG emissions reduction goals set forth in the CAP. Further, Alternative
6 2C would not conflict with any of DWR’s specific action GHG emissions reduction measures and
7 implements all applicable project level GHG emissions reduction measures as set forth in the CAP.
8 BDCP Alternative 2C is therefore consistent with the analysis performed in the CAP. There would be
9 no adverse effect.

10 **CEQA Conclusion:** SWP GHG emissions currently are below 1990 levels and achievement of the
11 goals of the CAP means that total DWR GHG emissions will be reduced to 50% of 1990 levels by
12 2020 and to 80% of 1990 levels by 2050. The implementation of BDCP Alternative 2C would not
13 affect DWR’s established emissions reduction goals or baseline (1990) emissions and therefore
14 would not result in a change in total DWR emissions that would be considered significant. Prior
15 adoption of the CAP by DWR already provides a commitment on the part of DWR to make all
16 necessary modifications to DWR’s REPP (as described above) or any other GHG emission reduction
17 measure in the CAP that are necessary to achieve DWR’s GHG emissions reduction goals. Therefore
18 no amendment to the approved CAP is necessary to ensure the occurrence of the additional GHG
19 emissions reduction activities needed to account for BDCP-related operational emissions. The effect
20 of BDCP Alternative 2C with respect to GHG emissions is less than cumulatively considerable and
21 therefore less than significant. No mitigation is required.

22 **Impact AQ-23: Generation of Cumulative Greenhouse Gas Emissions from Increased CVP**
23 **Pumping as a Result of Implementation of CM1**

24 **NEPA Effects:** As previously discussed, DWR’s CAP cannot be used to evaluate environmental
25 impacts associated with increased CVP pumping, as emissions associated with CVP are not under
26 DWR’s control and are not included in the CAP. Accordingly, GHG emissions resulting from increased
27 CVP energy use are evaluated separately from GHG emissions generated as a result of SWP energy
28 use.

29 Under Alternative 2C, operation of the CVP yields the generation of clean, GHG emissions-free,
30 hydroelectric energy. This electricity is sold into the California electricity market or directly to
31 energy users. Analysis of the No Action Alternative indicates that the CVP generates and will
32 continue to generate all of the electricity needed to operate the CVP system and approximately
33 3,500 GWh of excess hydroelectric energy that would be sold to energy users throughout California.
34 Implementation of Alternative 2C, however, would result in an increase of 103 GWh in the demand

1 for CVP generated electricity, which would result in a reduction of 103 GWh or electricity available
 2 for sale from the CVP to electricity users. This reduction in the supply of GHG emissions-free
 3 electricity to the California electricity users could result in a potential indirect effect of the project,
 4 as these electricity users would have to acquire substitute electricity supplies that may result in GHG
 5 emissions (although additional conservation is also a possible outcome as well).

6 It is unknown what type of power source (e.g., renewable, natural gas) would be substituted for CVP
 7 electricity or if some of the lost power would be made up with higher efficiency. Given State
 8 mandates for renewable energy and incentives for energy efficiency, it is possible that a
 9 considerable amount of this power would be replaced by renewable resources or would cease to be
 10 needed as a result of higher efficiency. However, to ensure a conservative analysis, indirect
 11 emissions were quantified for the entire quantity of electricity (103 GWh) using the current and
 12 future statewide energy mix (adjusted to reflect RPS) (please refer to Appendix 22A, *Air Quality*
 13 *Analysis Methodology*, for additional detail on quantification methods).

14 Substitution of 103 GWh of electricity with a mix of sources similar to the current statewide mix
 15 would result in emissions of 28,851 metric tons of CO₂e; however, under expected future conditions
 16 (after full implementation of the RPS), emissions would be 22,419 metric tons of CO₂e.

17 Use of CVP hydroelectricity to meet increased electricity demand from operation of CVP facilities
 18 associated with Alternative 2C would reduce available CVP hydroelectricity to other California
 19 electricity users. Substitution of the lost electricity with electricity from other sources could
 20 indirectly result in an increase of GHG emissions that is comparable or larger than the level of GHG
 21 emissions that trigger mandatory GHG reporting for major facilities. As a result, these emissions
 22 could contribute to a cumulatively considerable effect and are therefore adverse. However, these
 23 emissions would be caused by dozens of independent electricity users, who had previously bought
 24 CVP power, making decisions about different ways to substitute for the lost power. These decisions
 25 are beyond the control of Reclamation or any of the other BDCP Lead Agencies. Further, monitoring
 26 to determine the actual indirect change in emissions as a result of BDCP actions would not be
 27 feasible. In light of the impossibility of predicting where any additional emissions would occur, as
 28 well as Reclamation's lack of regulatory authority over the purchasers of power in the open market,
 29 no workable mitigation is available or feasible.

30 **CEQA Conclusion:** Operation of the CVP is a federal activity beyond the control of any State agency
 31 such as DWR, and the power purchases by private entities or public utilities in the private
 32 marketplace necessitated by a reduction in available CVP-generated hydroelectric power are beyond
 33 the control of the State, just as they are beyond the control of Reclamation. For these reasons, there
 34 are no feasible mitigation measures that could reduce this potentially significant indirect impact,
 35 which is solely attributable to operations of the CVP and not the SWP, to a less than significant level.
 36 This impact is therefore determined to be significant and unavoidable.

37 **Impact AQ-24: Generation of Regional Criteria Pollutants from Implementation of CM2–CM11**

38 **NEPA Effects:** Table 22-29 summarizes potential construction and operational emissions that may
 39 be generated by implementation of CM2–CM11. See the discussion of Impact AQ-24 under
 40 Alternative 1A.

41 Criteria pollutants from restoration and enhancement actions could exceed applicable general
 42 conformity *de minimis* levels and applicable local thresholds. The effect would vary according to the
 43 equipment used in construction of a specific conservation measure, the location, the timing of the

1 actions called for in the conservation measure, and the air quality conditions at the time of
 2 implementation; these effects would be evaluated and identified in the subsequent project-level
 3 environmental analysis conducted for the CM2–CM11 restoration and enhancement actions. The
 4 effect of increases in emissions during implementation of CM2–CM11 in excess of applicable general
 5 conformity *de minimis* levels and air district regional thresholds (Table 22-8) could violate air basin
 6 SIPs and worsen existing air quality conditions. Mitigation Measure AQ-24 would be available to
 7 reduce this effect, but emissions would still be adverse.

8 **CEQA Conclusion:** Construction and operational emissions associated with the restoration and
 9 enhancement actions would result in a significant impact if the incremental difference, or increase,
 10 relative to Existing Conditions exceeds the applicable local air district thresholds shown in Table 22-
 11 8; these effects are expected to be further evaluated and identified in the subsequent project-level
 12 environmental analysis conducted for the CM2–CM11 restoration and enhancement actions.
 13 Mitigation Measure AQ-24 would be available to reduce this effect, but may not be sufficient to
 14 reduce emissions below applicable air quality management district thresholds (see Table 22-8).
 15 Consequently, this impact would be significant and unavoidable.

16 **Mitigation Measure AQ-24: Develop an Air Quality Mitigation Plan (AQMP) to Ensure Air**
 17 **District Regulations and Recommended Mitigation are Incorporated into Future**
 18 **Conservation Measures and Associated Project Activities**

19 Please see Mitigation Measure AQ-24 under Impact AQ-24 in the discussion of Alternative 1A.

20 **Impact AQ-25: Exposure of Sensitive Receptors to Health Hazards from Localized Particulate**
 21 **Matter, Carbon Monoxide, and Diesel Particulate Matter from Implementation of CM2–CM11**

22 **NEPA Effects:** The potential for Alternative 2C to expose sensitive receptors increased health
 23 hazards from localized PM, CO, and DPM would be similar to Alternative 1A. Activities shown in
 24 Table 22-29 with the greatest potential to have short or long-term air quality impacts are also
 25 anticipated to have the greatest potential to expose receptors to substantial pollutant
 26 concentrations. The effect would vary according to the equipment used, the location and timing of
 27 the actions called for in the conservation measure, the meteorological and air quality conditions at
 28 the time of implementation, and the location of receptors relative to the emission source. Potential
 29 health effects would be evaluated and identified in the subsequent project-level environmental
 30 analysis conducted for the CM2–CM11 restoration and enhancement actions.

31 The effect of increases in PM, CO, or DPM (cancer and non-cancer-risk) in excess of applicable air
 32 district thresholds (Table 22-8) at receptor locations could result in adverse health impacts.
 33 Mitigation Measures AQ-24 and AQ-25 would be available to reduce this effect.

34 **CEQA Conclusion:** Construction and operational emissions associated with the restoration and
 35 enhancement actions under Alternative 2C would result in a significant impact if PM, CO, or DPM
 36 (cancer and non-cancer-risk) concentrations at receptor locations exceed the applicable local air
 37 district thresholds shown in Table 22-8; these effects are expected to be further evaluated and
 38 identified in the subsequent project-level environmental analysis conducted for the CM2–CM11
 39 restoration and enhancement actions. Mitigation Measures AQ-24 and AQ-25 would ensure localized
 40 concentrations at receptor locations would be below applicable air quality management district
 41 thresholds (see Table 22-8). Consequently, this impact would be less than significant.

1 **Mitigation Measure AQ-24: Develop an Air Quality Mitigation Plan (AQMP) to Ensure Air**
 2 **District Regulations and Recommended Mitigation are Incorporated into Future**
 3 **Conservation Measures and Associated Project Activities**

4 Please see Mitigation Measure AQ-24 under Impact AQ-24 in the discussion of Alternative 1A.

5 **Mitigation Measure AQ-25: Prepare a Project-Level Health Risk Assessment to Reduce**
 6 **Potential Health Risks from Exposure to Localized DPM and PM Concentrations**

7 Please see Mitigation Measure AQ-25 under Impact AQ-25 in the discussion of Alternative 1A.

8 **Impact AQ-26: Creation of Potential Odors Affecting a Substantial Number of People from**
 9 **Implementation of CM2–CM11**

10 **NEPA Effects:** The potential for Alternative 2C to expose sensitive receptors increased odors would
 11 be similar to Alternative 1A. Accordingly, construction activities associated with CM2-CM11 are not
 12 anticipated to result in nuisance odors. Similarly, while restored land uses associated with the
 13 program have the potential to generate odors from natural processes, the emissions would be
 14 similar in origin and magnitude to the existing land use types in the restored area (e.g., managed
 15 wetlands). Moreover, specific odor effects would be evaluated and identified in the subsequent
 16 project-level environmental analysis conducted for the CM2–CM11 restoration and enhancement
 17 actions. Accordingly, odor-related effects associated with CM2–CM11 would not be adverse.

18 **CEQA Conclusion:** Alternative 2C would not result in the addition of major odor producing facilities.
 19 Diesel emissions during construction could generate temporary odors, but these would quickly
 20 dissipate and cease once construction is completed. Increases in wetland, tidal, and upland habitats
 21 may increase the potential for odors from natural processes. However, the origin and magnitude of
 22 odors would be similar to the existing land use types in the restored area (e.g., managed wetlands).
 23 Moreover, specific odor impacts would be evaluated and identified in the subsequent project-level
 24 environmental analysis conducted for the CM2–CM11 restoration and enhancement actions.
 25 Accordingly, the impact of exposure of sensitive receptors to potential odors would be less than
 26 significant. No mitigation is required.

27 **Impact AQ-27: Generation of Cumulative Greenhouse Gas Emissions from Implementation of**
 28 **CM2–CM11**

29 **NEPA Effects:** CM2–CM11 implemented under Alternative 2C would result in local GHG emissions
 30 from construction equipment and vehicle exhaust, similar to Alternative 1A. Restoration activities
 31 with the greatest potential for emissions include those that break ground and require use of
 32 earthmoving equipment. The type of restoration action and related construction equipment use are
 33 shown in Table 22-29. Implementing CM2–CM11 would also affect long-term sequestration rates
 34 through land use changes, such as conversion of agricultural land to wetlands, inundation of peat
 35 soils, drainage of peat soils, and removal or planting of carbon-sequestering plants.

36 Without additional information on site-specific characteristics associated with each of the
 37 restoration components, a complete assessment of GHG flux from CM2–CM11 is currently not
 38 possible. The effect of carbon sequestration and CH₄ generation would vary by land use type, season,
 39 and chemical and biological characteristics; these effects would be evaluated and identified in the
 40 subsequent project-level environmental analysis conducted for the CM2–CM11 restoration and
 41 enhancement actions. Mitigation Measures AQ-24 and AQ-27 would be available to reduce this

1 effect. However, due to the potential for increases in GHG emissions from construction and land use
2 change, this effect would be adverse.

3 **CEQA Conclusion:** The restoration and enhancement actions under Alternative 2C could result in a
4 significant impact if activities are inconsistent with applicable GHG reduction plans, do not
5 contribute to a lower carbon future, or generate excessive emissions, relative to other projects
6 throughout the state. These effects are expected to be further evaluated and identified in the
7 subsequent project-level environmental analysis conducted for the CM2–CM11 restoration and
8 enhancement actions. Mitigation Measures AQ-24 and AQ-27 would be available to reduce this
9 impact, but may not be sufficient to reduce to a less-than-significant level. Consequently, this impact
10 would be significant and unavoidable.

11 **Mitigation Measure AQ-24: Develop an Air Quality Mitigation Plan (AQMP) to Ensure Air**
12 **District Regulations and Recommended Mitigation are Incorporated into Future**
13 **Conservation Measures and Associated Project Activities**

14 Please see Mitigation Measure AQ-24 under Impact AQ-24 in the discussion of Alternative 1A.

15 **Mitigation Measure AQ-27: Prepare a Land Use Sequestration Analysis to Quantify and**
16 **Mitigate (as Needed) GHG Flux Associated with Conservation Measures and Associated**
17 **Project Activities**

18 Please see Mitigation Measure AQ-27 under Impact AQ-27 in the discussion of Alternative 1A.

19 **22.3.3.8 Alternative 3—Dual Conveyance with Pipeline/Tunnel and**
20 **Intakes 1 and 2 (6,000 cfs; Operational Scenario A)**

21 A total of two intakes would be constructed under Alternative 3. For the purposes of this analysis, it
22 was assumed that Intakes 1–2 would be constructed under Alternative 3. Under this alternative, an
23 intermediate forebay would also be constructed, and the conveyance facility would be a buried
24 pipeline and tunnels (Figures 3-2 and 3-8 in Chapter 3, *Description of Alternatives*).

25 Construction and operation of Alternative 3 would require the use of electricity, which would be
26 supplied by the California electrical grid. Power plants located throughout the state supply the grid
27 with power, which will be distributed to the Study area to meet project demand. Power supplied by
28 statewide power plants will generate criteria pollutants. Because these power plants are located
29 throughout the state, criteria pollutant emissions associated with Alternative 3 electricity demand
30 cannot be ascribed to a specific air basin or air district within the Study area. Criteria pollutant
31 emissions from electricity consumption, which are summarized in Table 22-89, are therefore
32 provided for informational purposes only and are not included in the impact conclusion.

1 **Table 22-89. Criteria Pollutant Emissions from Electricity Consumption: Construction and Net**
 2 **Project Operations, Alternative 3 (tons/year)^{a,b}**

Year	Analysis	ROG	CO	NO _x	PM10	PM2.5 ^c	SO ₂
2016	-	0	0	0	0	0	0
2017	-	0	0	0	0	0	0
2018	-	<1	<1	<1	<1	<1	<1
2019	-	<1	2	<1	<1	<1	1
2020	-	<1	12	1	1	1	5
2021	-	<1	31	2	3	3	13
2022	-	<1	44	3	4	4	18
2023	-	<1	39	3	3	3	16
2024	-	<1	41	3	3	3	17
2025	-	<1	27	2	2	2	12
2026	-	<1	10	1	1	1	4
2027	-	<1	2	<1	<1	<1	1
2028	-	<1	<1	<1	<1	<1	<1
2029	-	<1	<1	<1	<1	<1	<1
ELT	CEQA	1	13	180	15	15	76
LLT	NEPA	2	17	238	20	20	101
LLT	CEQA	1	5	73	6	6	31

NEPA = Compares criteria pollutant emissions after implementation of Alternative 3 to the No Action Alternative.

CEQA = Compares criteria pollutant emissions after implementation of Alternative 3 to Existing Conditions.

^a Emissions assume implementation of RPS (see Appendix 22A, *Air Quality Analysis Methodology*). Power plants that generate electricity for the proposed project would be subject to local air district permitting requirements, including standards to implement BACT to reduce criteria pollutant emissions.

^b Because GHG emissions are cumulative (see Section 22.3.2.1) and not evaluated at the local air basin or air district level, they are discussed in Impacts AQ-21 and AQ-22. The GHG analysis for SWP power utilizes actual and forecasted GHG emissions rates for the SWP system, which differs slightly from the above analysis. Statewide grid average emission factors were utilized for the above analysis as criteria pollutant emission factors for SWP were unavailable. Please also note that the above analysis does not account for additional renewable energy that will be procured through modifications to DWR's REPP (see Impact AQ-22). Accordingly, the emissions results presented above represent a conservative assessment of potential criteria pollutant emissions.

^c Emission factors for PM2.5 are currently unavailable. Consequently, PM2.5 emissions were assumed to equal PM10 emissions. Because PM2.5 represents a fraction of PM10, this approach represents a conservative assessment of PM2.5 emissions from electricity consumption.

3

4 Construction activities would generate emissions of ozone precursors (ROG and NO_x), CO, PM10,
 5 PM2.5, and SO₂. Table 22-90 summarizes criteria pollutant emissions that would be generated in the
 6 BAAQMD, SMAQMD, SJVAPCD, and YSAQMD in pounds per day and tons per year. Emissions
 7 estimates include implementation of environmental commitments (see Appendix 3B, *Environmental*
 8 *Commitments*). Although emissions are presented in different units (pounds and tons), the amounts
 9 of emissions are identical (i.e., 2,000 pounds is identical to 1 ton). Summarizing emissions in both

1 pounds per day and tons per year is necessary to evaluate project-level effects against the
2 appropriate air district thresholds, which are given in both pounds and tons (see Table 22-8).

3 As shown in Appendix 22B, *Air Quality Assumptions*, construction activities during several phases
4 will likely occur concurrently. To ensure a conservative analysis, the maximum daily emissions
5 during these periods of overlap were estimated assuming all equipment would operate at the same
6 time—this gives the maximum total project-related air quality impact during construction.
7 Accordingly, the daily emissions estimates represent a conservative assessment of construction
8 impacts. Exceedances of the air district thresholds are shown in underlined text.
9

1 **Table 22-90. Criteria Pollutant Emissions from Construction of Alternative 3 (pounds/day and tons/year)**

Year	Maximum Daily Emissions (pounds/day)										Annual Emissions (tons/year)									
	Bay Area Air Quality Management District										Bay Area Air Quality Management District									
	ROG	NOx	CO	PM10			PM2.5			SO2	ROG	NOx	CO	PM10			PM2.5			SO2
			Exhaust	Dust	Total	Exhaust	Dust	Total				Exhaust	Dust	Total	Exhaust	Dust	Total			
2016	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
2017	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
2018	8	<u>108</u>	50	1	68	69	1	17	17	1	<1	1	1	<1	1	1	<1	0	0	<1
2019	21	<u>256</u>	143	1	119	120	1	29	30	2	2	14	12	<1	2	2	<1	0	1	<1
2020	32	<u>343</u>	211	2	141	143	2	34	36	3	3	22	20	<1	4	4	<1	1	1	<1
2021	35	<u>371</u>	224	3	157	160	3	38	41	3	4	30	26	<1	6	6	<1	1	1	<1
2022	40	<u>434</u>	248	3	197	199	3	49	52	4	4	33	27	<1	8	8	<1	2	2	<1
2023	<u>99</u>	<u>827</u>	581	7	352	359	7	72	79	7	7	54	44	1	20	21	1	4	4	<1
2024	<u>107</u>	<u>960</u>	621	8	471	479	7	102	110	8	11	80	67	1	26	27	1	5	5	1
2025	<u>99</u>	<u>907</u>	565	6	440	447	6	98	104	8	7	48	41	<1	17	17	<1	3	3	<1
2026	<u>64</u>	<u>654</u>	382	5	381	385	5	86	90	7	5	37	30	<1	15	16	<1	3	3	<1
2027	<u>55</u>	<u>554</u>	325	6	340	346	6	76	82	7	3	20	16	<1	13	13	<1	2	3	<1
2028	<u>18</u>	<u>277</u>	116	1	263	264	1	58	60	3	0	2	1	<1	4	4	<1	1	1	<1
2029	8	<u>154</u>	49	1	113	113	1	29	30	2	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
<i>Thresholds</i>	<i>54</i>	<i>54</i>	<i>-</i>	<i>82</i>	<i>BMPs</i>	<i>-</i>	<i>54</i>	<i>BMPs</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>
Year	Sacramento Metropolitan Air Quality Management District										Sacramento Metropolitan Air Quality Management District									
	ROG	NOx	CO	PM10			PM2.5			SO2	ROG	NOx	CO	PM10			PM2.5			SO2
				Exhaust	Dust	Total	Exhaust	Dust	Total				Exhaust	Dust	Total	Exhaust	Dust	Total		
2016	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2017	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2018	32	<u>364</u>	216	6	95	101	6	16	22	1	1	12	8	<1	6	6	<1	1	1	<1
2019	47	<u>483</u>	327	5	244	249	5	41	46	2	3	16	21	<1	17	18	<1	2	3	<1
2020	66	<u>733</u>	460	8	306	314	8	49	57	3	6	50	42	1	26	26	1	3	4	<1
2021	75	<u>852</u>	607	9	394	402	8	64	72	3	8	70	61	1	37	38	1	5	6	<1
2022	108	<u>1,143</u>	895	10	480	489	10	77	86	6	11	87	95	1	44	45	1	6	7	<1
2023	193	<u>1,733</u>	1,402	20	655	673	19	103	121	13	19	145	147	2	58	60	2	8	10	1
2024	323	<u>2,920</u>	2,031	38	903	941	37	154	191	17	25	187	173	3	67	69	3	10	12	1
2025	292	<u>2,786</u>	1,862	35	890	925	34	149	182	16	22	158	141	3	45	48	3	7	9	1
2026	228	<u>1,909</u>	1,285	26	565	591	25	107	132	12	21	144	126	3	41	43	2	6	9	<1
2027	245	<u>2,151</u>	1,454	32	622	655	31	114	145	16	17	124	104	2	45	47	2	7	9	1
2028	85	<u>816</u>	522	6	410	416	6	77	82	5	4	25	25	<1	23	23	<1	3	4	<1
2029	22	<u>331</u>	164	2	171	173	2	38	40	3	<1	3	3	<1	3	3	<1	<1	<1	<1
<i>Thresholds</i>	<i>-</i>	<i>85</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>

San Joaquin Valley Air Pollution Control District											San Joaquin Valley Air Pollution Control District									
Year	ROG	NO _x	CO	PM10			PM2.5			SO ₂	ROG	NO _x	CO	PM10			PM2.5			SO ₂
				Exhaust	Dust	Total	Exhaust	Dust	Total					Exhaust	Dust	Total	Exhaust	Dust	Total	
2016	0	0	0	0	29	29	0	4	4	0	0	0	0	0	2	2	0	<1	<1	0
2017	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2018	23	106	157	2	95	97	2	12	14	1	1	5	9	<1	10	10	<1	1	1	<1
2019	76	590	551	6	157	164	6	20	26	2	9	<u>64</u>	61	1	15	<u>15</u>	1	2	2	<1
2020	150	1,095	1,054	14	250	263	13	31	44	4	<u>15</u>	<u>110</u>	108	1	28	<u>29</u>	1	3	5	<1
2021	213	1,631	1,501	23	572	595	22	67	88	5	<u>24</u>	<u>171</u>	171	2	44	<u>46</u>	2	5	7	1
2022	157	1,052	1,164	12	222	234	12	28	40	3	<u>22</u>	<u>146</u>	165	2	26	<u>28</u>	2	3	5	<1
2023	138	870	1,010	9	144	153	9	19	28	3	<u>20</u>	<u>119</u>	145	1	14	<u>15</u>	1	2	3	<1
2024	135	812	970	8	123	131	8	17	24	3	<u>19</u>	<u>109</u>	133	1	13	14	1	2	3	<1
2025	113	661	758	6	98	104	6	14	20	2	<u>12</u>	<u>72</u>	82	1	11	12	1	1	2	<1
2026	74	466	474	4	61	65	4	7	11	2	5	<u>29</u>	28	<1	2	3	<1	<1	1	<1
2027	2	2	7	6	1	7	6	<1	6	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
2028	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2029	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<i>Thresholds</i>	-	-	-	-	-	-	-	-	-	-	<i>10</i>	<i>10</i>	-	-	-	<i>15</i>	-	-	<i>15</i>	-
Yolo Solano Air Quality Management District											Yolo Solano Air Quality Management District									
Year	ROG	NO _x	CO	PM10			PM2.5			SO ₂	ROG	NO _x	CO	PM10			PM2.5			SO ₂
				Exhaust	Dust	Total	Exhaust	Dust	Total					Exhaust	Dust	Total	Exhaust	Dust	Total	
2016	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2017	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2018	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2019	3	84	17	<1	23	23	<1	6	6	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
2020	3	84	18	<1	23	23	<1	6	6	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
2021	5	132	29	<1	37	37	<1	9	10	1	<1	2	1	<1	1	1	<1	<1	<1	<1
2022	8	211	48	1	61	61	1	16	16	1	<1	8	2	<1	2	2	<1	1	1	<1
2023	10	225	60	1	81	<u>82</u>	1	21	22	2	<1	7	2	<1	2	3	<1	1	1	<1
2024	10	220	60	1	81	<u>82</u>	1	21	22	2	<1	7	2	<1	2	2	<1	1	1	<1
2025	10	206	57	1	78	78	1	20	21	2	<1	4	1	<1	2	2	<1	<1	<1	<1
2026	8	156	45	1	60	61	1	16	16	1	<1	4	1	<1	2	2	<1	<1	<1	<1
2027	8	152	44	1	60	61	1	16	16	1	<1	4	1	<1	2	2	<1	<1	<1	<1
2028	5	101	30	<1	41	41	<1	11	11	1	<1	4	1	<1	2	2	<1	<1	<1	<1
2029	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<i>Thresholds</i>	-	-	-	-	-	<i>80</i>	-	-	-	-	<i>10</i>	<i>10</i>	-	-	-	-	-	-	-	-

1 Operation and maintenance activities under Alternative 3 would result in emissions of ROG, NO_x, CO,
2 PM10, PM2.5, and SO₂. Emissions were quantified for both ELT and LLT conditions, although
3 activities would take place annually until project decommissioning. Future emissions, in general, are
4 anticipated to lessen because of continuing improvements in vehicle and equipment engine
5 technology.

6 Table 22-91 summarizes criteria pollutant emissions associated with operation of Alternative 3 in
7 the BAAQMD, SMAQMD, and SJVAPCD in pounds per day and tons per year (no operational
8 emissions would be generated in the YSAMQD). Although emissions are presented in different units
9 (pounds and tons), the amounts of emissions are identical (i.e., 2,000 pounds is identical to 1 ton).
10 Summarizing emissions in both pounds per day and tons per year is necessary to evaluate project-
11 level effects against the appropriate air district thresholds, which are given in both pounds and tons
12 (see Table 22-8).

13 **Table 22-91. Criteria Pollutant Emissions from Operation of Alternative 3 (pounds per day and tons**
14 **per year)**

Maximum Daily Emissions (pounds/day)							Annual Emissions (tons/year)					
Condition	Bay Area Air Quality Management District						Bay Area Air Quality Management District					
	ROG	NO _x	CO	PM10	PM2.5	SO ₂	ROG	NO _x	CO	PM10	PM2.5	SO ₂
ELT	3	19	32	6	2	0	0.01	0.08	0.14	0.02	0.01	0.00
LLT	3	16	31	6	1	0	0.01	0.07	0.14	0.02	0.01	0.00
<i>Thresholds</i>	<i>54</i>	<i>54</i>	<i>-</i>	<i>82</i>	<i>82</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>
Condition	Sacramento Metropolitan Air Quality Management District						Sacramento Metropolitan Air Quality Management District					
	ROG	NO _x	CO	PM10	PM2.5	SO ₂	ROG	NO _x	CO	PM10	PM2.5	SO ₂
ELT	4	22	40	7	2	0	0.10	0.61	1.23	0.21	0.06	0.00
LLT	3	19	38	7	2	0	0.09	0.51	1.17	0.20	0.05	0.00
<i>Thresholds</i>	<i>65</i>	<i>65</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>
Condition	San Joaquin Valley Air Pollution Control District						San Joaquin Valley Air Pollution Control District					
	ROG	NO _x	CO	PM10	PM2.5	SO ₂	ROG	NO _x	CO	PM10	PM2.5	SO ₂
ELT	3	19	36	6	2	0	0.01	0.07	0.13	0.02	0.00	0.00
LLT	3	16	33	6	1	0	0.01	0.06	0.12	0.01	0.00	0.00
<i>Thresholds</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>10</i>	<i>10</i>	<i>-</i>	<i>15</i>	<i>15</i>	<i>-</i>

15
16 **Impact AQ-1: Generation of Criteria Pollutants in Excess of the SMAQMD Regional Thresholds**
17 **during Construction of the Proposed Water Conveyance Facility**

18 **NEPA Effects:** As shown in Table 22-90, construction emissions would exceed SMAQMD's daily NO_x
19 threshold for all years between 2018 and 2029, even with implementation of environmental
20 commitments (see Appendix 3B, *Environmental Commitments*). Since NO_x is a precursor to ozone
21 and PM, exceedances of SMAQMD's daily NO_x threshold could impact both regional ozone and PM
22 formation, which could worsen regional air quality and air basin attainment of the NAAQS and
23 CAAQS.

24 While equipment could operate at any work area identified for this alternative, the highest level of
25 NO_x emissions in the SMAQMD is expected to occur at those sites where the duration and intensity

1 of construction activities would be greatest. This includes all intake and intake pumping plant sites
 2 along the east bank of the Sacramento River, as well as the intermediate forebay (and pumping
 3 plant) site west of South Stone Lake and east of the Sacramento River.

4 Environmental commitments will reduce construction-related emissions however, as shown in
 5 Table 22-90, NO_x emissions would still exceed SMAQMD's regional thresholds identified in Table 22-
 6 8 and would result in an adverse effect to air quality. Mitigation Measures AQ-1a and AQ-1b would
 7 be available to reduce NO_x emissions, and would thus address regional effects related to secondary
 8 ozone and PM formation.

9 **CEQA Conclusion:** NO_x emissions generated during construction would exceed SMAQMD threshold
 10 identified in Table 22-8. Since NO_x is a precursor to ozone and PM, exceedances of SMAQMD's daily
 11 NO_x threshold could impact both regional ozone and PM formation. SMAQMD's regional emissions
 12 thresholds (Table 22-8) have been adopted to ensure projects do not hinder attainment of the
 13 CAAQS or NAAQS. The impact of generating NO_x emissions in excess of local air district thresholds
 14 would therefore violate applicable air quality standards in the Study area and could contribute to or
 15 worsen an existing air quality conditions. This would be a significant impact. Mitigation Measures
 16 AQ-1a and AQ-1b would be available to reduce NO_x emissions to a less-than-significant level by
 17 offsetting emissions to quantities below SMAQMD CEQA thresholds (see Table 22-8).

18 **Mitigation Measure AQ-1a: Mitigate and Offset Construction-Generated Criteria Pollutant**
 19 **Emissions within the SFNA to Net Zero (0) for Emissions in Excess of General Conformity**
 20 ***De Minimis* Thresholds (Where Applicable) and to Quantities below Applicable CEQA**
 21 **Thresholds for Other Pollutants**

22 Please see Mitigation Measure AQ-1a under Impact AQ-1 in the discussion of Alternative 1A.

23 **Mitigation Measure AQ-1b: Develop an Alternative or Complementary Offsite Mitigation**
 24 **Program to Mitigate and Offset Construction-Generated Criteria Pollutant Emissions**
 25 **within the SFNA to Net Zero (0) for Emissions in Excess of General Conformity *De Minimis***
 26 **Thresholds (Where Applicable) and to Quantities below Applicable CEQA Thresholds for**
 27 **Other Pollutants**

28 Please see Mitigation Measure AQ-1b under Impact AQ-1 in the discussion of Alternative 1A.

29 **Impact AQ-2: Generation of Criteria Pollutants in Excess of the YSAQMD Regional Thresholds**
 30 **during Construction of the Proposed Water Conveyance Facility**

31 **NEPA Effects:** As shown in Table 22-90, construction emissions would exceed YSAQMD regional
 32 PM10 threshold in 2023 and 2024, even with implementation of environmental commitments (see
 33 Appendix 3B, *Environmental Commitments*). Exceedances of YSAQMD's PM10 threshold could
 34 impede attainment of the NAAQS and CAAQS for PM10. All emissions generated within YSAQMD are
 35 a result of haul truck movement for equipment and material delivery.

36 Environmental commitments outlined in Appendix 3B, *Environmental Commitments*, will reduce
 37 construction-related emissions; however, as shown in Table 22-90, PM10 emissions would still
 38 exceed the applicable YSAQMD thresholds identified in Table 22-8 and result in an adverse regional
 39 effect to air quality. Mitigation Measures AQ-1a and AQ-1b are available to reduce PM10 emissions.

40 **CEQA Conclusion:** Emissions of PM10 generated during construction would exceed YSAQMD's
 41 regional thresholds identified in Table 22-8. Exceedances of YSAQMD's PM10 threshold could

1 impede attainment of the NAAQS and CAAQS for PM₁₀. YSAQMD's regional emissions thresholds
 2 (Table 22-8) have been adopted to ensure projects do not hinder attainment of the CAAQS or
 3 NAAQS. The impact of generating PM₁₀ in excess of local air district regional thresholds would
 4 therefore violate applicable air quality standards in the study area and could contribute to or
 5 worsen an existing air quality conditions. This would be a significant impact. Mitigation Measures
 6 AQ-1a and AQ-1b would be available to reduce PM₁₀ emissions to a less-than-significant level by
 7 offsetting emissions to quantities below YSAQMD CEQA thresholds (see Table 22-8).

8 **Mitigation Measure AQ-1a: Mitigate and Offset Construction-Generated Criteria Pollutant**
 9 **Emissions within the SFNA to Net Zero (0) for Emissions in Excess of General Conformity**
 10 ***De Minimis* Thresholds (Where Applicable) and to Quantities below Applicable CEQA**
 11 **Thresholds for Other Pollutants**

12 Please see Mitigation Measure AQ-1a under Impact AQ-1 in the discussion of Alternative 1A.

13 **Mitigation Measure AQ-1b: Develop an Alternative or Complementary Offsite Mitigation**
 14 **Program to Mitigate and Offset Construction-Generated Criteria Pollutant Emissions**
 15 **within the SFNA to Net Zero (0) for Emissions in Excess of General Conformity *De Minimis***
 16 **Thresholds (Where Applicable) and to Quantities below Applicable CEQA Thresholds for**
 17 **Other Pollutants**

18 Please see Mitigation Measure AQ-1b under Impact AQ-1 in the discussion of Alternative 1A.

19 **Impact AQ-3: Generation of Criteria Pollutants in Excess of the BAAQMD Regional Thresholds**
 20 **during Construction of the Proposed Water Conveyance Facility**

21 ***NEPA Effects:*** As shown in Table 22-90, construction emissions would exceed BAAQMD's daily
 22 thresholds for the following pollutants and years, even with implementation of environmental
 23 commitments. All other pollutants would be below air district thresholds and therefore would not
 24 result in an adverse air quality effect.

- 25 ● ROG: 2023–2027
- 26 ● NO_x: 2018–2029

27 Since ROG and NO_x are precursors to ozone and NO_x is a precursor to PM, exceedances of BAAQMD's
 28 ROG and NO_x thresholds could impact both regional ozone and PM formation, which could worsen
 29 regional air quality and air basin attainment of the NAAQS and CAAQS.

30 While equipment could operate at any work area identified for this alternative, the highest level of
 31 ROG and NO_x emissions in the BAAQMD are expected to occur at those sites where the duration and
 32 intensity of construction activities would be greatest, including the site of the Byron Tract Forebay
 33 adjacent to and south of Clifton Court Forebay.

34 Environmental commitments outlined in Appendix 3B, *Environmental Commitments*, will reduce
 35 construction-related emissions; however, as shown in Table 22-80, ROG and NO_x emissions would
 36 still exceed BAAQMD's regional thresholds identified in Table 22-8 and would result in an adverse
 37 effect to air quality. Mitigation Measures AQ-3a and AQ-3b are available to reduce ROG and NO_x
 38 emissions, and would thus address regional effects related to secondary ozone and PM formation.

39 ***CEQA Conclusion:*** Emissions of ROG and NO_x generated during construction would exceed BAAQMD
 40 regional thresholds identified in Table 22-8. Since ROG and NO_x are precursors to ozone and NO_x is a

precursor to PM, exceedances of BAAQMD's ROG and NO_x thresholds could impact both regional ozone and PM formation. BAAQMD's regional emissions thresholds (Table 22-8) have been adopted to ensure projects do not hinder attainment of the CAAQS or NAAQS. The impact of generating ROG and NO_x emissions in excess of BAAQMD's thresholds would therefore violate applicable air quality standards in the Study area and could contribute to or worsen an existing air quality conditions. This would be a significant impact. Mitigation Measures AQ-3a and AQ-3b would be available to reduce ROG and NO_x emissions to a less-than-significant level by offsetting emissions to quantities below BAAQMD CEQA thresholds (see Table 22-8).

Mitigation Measure AQ-3a: Mitigate and Offset Construction-Generated Criteria Pollutant Emissions within BAAQMD/SFBAAB to Net Zero (0) for Emissions in Excess of General Conformity *De Minimis* Thresholds (Where Applicable) and to Quantities below Applicable BAAQMD CEQA Thresholds for Other Pollutants

Please see Mitigation Measure AQ-3a under Impact AQ-3 in the discussion of Alternative 1A.

Mitigation Measure AQ-3b: Develop an Alternative or Complementary Offsite Mitigation Program to Mitigate and Offset Construction-Generated Criteria Pollutant Emissions within the BAAQMD/SFBAAB to Net Zero (0) for Emissions in Excess of General Conformity *De Minimis* Thresholds (Where Applicable) and to Quantities below Applicable BAAQMD CEQA Thresholds for Other Pollutants

Please see Mitigation Measure AQ-3b under Impact AQ-3 in the discussion of Alternative 1A.

Impact AQ-4: Generation of Criteria Pollutants in Excess of the SJVAPCD Regional Thresholds during Construction of the Proposed Water Conveyance Facility

NEPA Effects: As shown in Table 22-90, construction emissions would exceed SJVAPCD's annual thresholds for the following pollutants and years, even with implementation of environmental commitments. All other pollutants would be below air district thresholds and therefore would not result in an adverse air quality effect.

- ROG: 2020–2025
- NO_x: 2019–2026
- PM10: 2019–2023

Since ROG and NO_x are precursors to ozone and NO_x is a precursor to PM, exceedances of SJVAPCD's ROG and NO_x thresholds could impact both regional ozone and PM formation, which could worsen regional air quality and air basin attainment of the NAAQS and CAAQS. Similarly, exceedances of SJVAPCD's PM10 threshold could impede attainment of the NAAQS and CAAQS for PM10.

While equipment could operate at any work area identified for this alternative, the highest level of ROG, NO_x, and PM10 emissions in the SJVAPCD is expected to occur at those sites where the duration and intensity of construction activities would be greatest. This includes all temporary and permanent utility sites, as well as all construction sites along the pipeline/tunnel conveyance alignment. For a map of the proposed tunnel alignment, see Mapbook Figure M3-1.

Environmental commitments outlined in Appendix 3B, *Environmental Commitments*, will reduce construction-related emissions; however, as shown in Table 22-90, ROG, NO_x, and PM10 emissions would still exceed SJVAPCD's regional thresholds identified in Table 22-8 and would result in an

1 adverse effect to air quality. Mitigation Measures AQ-4a and AQ-4b are available to reduce ROG, NO_x,
2 and PM₁₀ emissions, and would thus address regional effects related to secondary ozone and PM
3 formation.

4 **CEQA Conclusion:** Emissions of ROG, NO_x, and PM₁₀ generated during construction would exceed
5 SJVAPCD's regional significance threshold identified in Table 22-8. Since ROG and NO_x are
6 precursors to ozone and NO_x is a precursor to PM, exceedances of SJVAPCD's ROG and NO_x
7 thresholds could impact both regional ozone and PM formation, which could worsen regional air
8 quality and air basin attainment of the NAAQS and CAAQS. Similarly, exceedances of SJVAPCD's
9 PM₁₀ threshold could impede attainment of the NAAQS and CAAQS for PM₁₀. SJVAPCD's regional
10 emissions thresholds (Table 22-8) have been adopted to ensure projects do not hinder attainment of
11 the CAAQS or NAAQS. The impact of generating ROG, NO_x, and PM₁₀ emissions in excess of local air
12 district thresholds would therefore violate applicable air quality standards in the Study area and
13 could contribute to or worsen an existing air quality conditions. This would be a significant impact.
14 Mitigation Measures AQ-4a and AQ-4b would be available to reduce ROG, NO_x, and PM₁₀ emissions
15 to a less-than-significant level by offsetting emissions to quantities below SJVAPCD CEQA thresholds
16 (see Table 22-8).

17 **Mitigation Measure AQ-4a: Mitigate and Offset Construction-Generated Criteria Pollutant**
18 **Emissions within SJVAPCD/SJVAB to Net Zero (0) for Emissions in Excess of General**
19 **Conformity *De Minimis* Thresholds (Where Applicable) and to Quantities below**
20 **Applicable SJVAPCD CEQA Thresholds for Other Pollutants**

21 Please see Mitigation Measure AQ-4a under Impact AQ-4 in the discussion of Alternative 1A.

22 **Mitigation Measure AQ-4b: Develop an Alternative or Complementary Offsite Mitigation**
23 **Program to Mitigate and Offset Construction-Generated Criteria Pollutant Emissions**
24 **within the SJVAPCD/SJVAB to Net Zero (0) for Emissions in Excess of General Conformity**
25 ***De Minimis* Thresholds (Where Applicable) and to Quantities below Applicable SJVAPCD**
26 **CEQA Thresholds for Other Pollutants**

27 Please see Mitigation Measure AQ-4b under Impact AQ-4 in the discussion of Alternative 1A.

28 **Impact AQ-6: Generation of Criteria Pollutants in Excess of the SMAQMD Regional Thresholds**
29 **from Operation and Maintenance of the Proposed Water Conveyance Facility**

30 **NEPA Effects:** Operations and maintenance in SMAQMD include both routine activities and yearly
31 maintenance. Daily activities at all pumping plants and intakes are covered by maintenance,
32 management, repair, and operating crews. Yearly maintenance would include annual inspections, as
33 well as tunnel dewatering and sediment removal (see Appendix 22A, *Air Quality Analysis*
34 *Methodology*, for additional detail). The highest concentration of operational emissions in the
35 SMAQMD are expected at intake and intake pumping plant sites along the east bank of the
36 Sacramento River, as well as at the intermediate forebay (and pumping plant) site west of South
37 Stone Lake and east of the Sacramento River. As shown in Table 22-91, operation and maintenance
38 activities under Alternative 3 would not exceed SMAQMD's regional thresholds of significance and
39 there would be no adverse effect (see Table 22-8). Accordingly, project operations would not
40 contribute to or worsen existing air quality exceedances. There would be no adverse effect.

41 **CEQA Conclusion:** Emissions generated during operation and maintenance activities would not
42 exceed SMAQMD regional thresholds for criteria pollutants. SMAQMD's regional emissions

1 thresholds (Table 22-8) have been adopted to ensure projects do not hinder attainment of the
 2 CAAQS. The impact of generating emissions in excess of local air district would therefore violate
 3 applicable air quality standards in the Study area and could contribute to or worsen an existing air
 4 quality conditions. Because project operations would not exceed SMAQMD regional thresholds, the
 5 impact would be less than significant. No mitigation is required.

6 **Impact AQ-6: Generation of Criteria Pollutants in Excess of the YSAQMD Regional Thresholds**
 7 **from Operation and Maintenance of the Proposed Water Conveyance Facility**

8 **NEPA Effects:** Alternative 3 would not construct any permanent features in the YSAQMD that would
 9 require routine operations and maintenance. No operational emissions would be generated in the
 10 YSAQMD. Consequently, operation of Alternative 3 would neither exceed the YSAQMD thresholds of
 11 significance nor result in an adverse effect to air quality.

12 **CEQA Conclusion:** Operational emissions generated by the alternative would not exceed YSAQMD's
 13 thresholds of significance. This impact would be less than significant. No mitigation is required.

14 **Impact AQ-7: Generation of Criteria Pollutants in Excess of the BAAQMD Regional Thresholds**
 15 **from Operation and Maintenance of the Proposed Water Conveyance Facility**

16 **NEPA Effects:** Operations and maintenance in BAAQMD include annual inspections, tunnel
 17 dewatering, and sediment removal (see Appendix 22A, *Air Quality Analysis Methodology*, for
 18 additional detail). The highest concentration of operational emissions in the BAAQMD are expected
 19 at the Byron Tract Forebay (including control gates), which is adjacent to and south of Clifton Court
 20 Forebay. As shown in Table 22-91, operation and maintenance activities under Alternative 3 would
 21 not exceed BAAQMD's regional thresholds of significance (see Table 22-8). Thus, project operations
 22 would not contribute to or worsen existing air quality exceedances. There would be no adverse
 23 effect.

24 **CEQA Conclusion:** Emissions generated during operation and maintenance activities would not
 25 exceed BAAQMD regional thresholds for criteria pollutants. The BAAQMD's regional emissions
 26 thresholds (Table 22-8) have been adopted to ensure projects do not hinder attainment of the
 27 CAAQS. The impact of generating emissions in excess of local air district thresholds would violate
 28 applicable air quality standards in the Study area and could contribute to or worsen an existing air
 29 quality conditions. Because project operations would not exceed BAAQMD regional thresholds, the
 30 impact would be less than significant. No mitigation is required.

31 **Impact AQ-8: Generation of Criteria Pollutants in Excess of the SJVAPCD Regional Thresholds**
 32 **from Operation and Maintenance of the Proposed Water Conveyance Facility**

33 **NEPA Effects:** Operations and maintenance in SJVAPCD include annual inspections and tunnel
 34 dewatering (see Appendix 22A, *Air Quality Analysis Methodology*, for additional detail). The highest
 35 concentration of operational emissions in the SJVAPCD is expected at routine inspection sites along
 36 the pipeline/tunnel conveyance alignment. For a map of the proposed tunnel alignment, see
 37 Mapbook Figure M3-1. As shown in Table 22-91, operation and maintenance activities under
 38 Alternative 3 would not exceed SJVAPCD's regional thresholds of significance (see Table 22-8).
 39 Accordingly, project operations would not contribute to or worsen existing air quality exceedances.
 40 There would be no adverse effect.

1 **CEQA Conclusion:** Emissions generated during operation and maintenance activities would not
 2 exceed SJVAPCD's regional thresholds of significance. The SJVAPCD's regional emissions thresholds
 3 (Table 22-8) have been adopted to ensure projects do not hinder attainment of the CAAQS. The
 4 impact of generating emissions in excess of local air district thresholds would violate applicable air
 5 quality standards in the Study area and could contribute to or worsen an existing air quality
 6 conditions. Because project operations would not exceed regional SJVAPCD thresholds, the impact
 7 would be less than significant. No mitigation is required.

8 **Impact AQ-9: Exposure of Sensitive Receptors to Health Hazards from Localized Particulate**
 9 **Matter in Excess of SMAQMD's Health-Based Concentration Thresholds**

10 **NEPA Effects:** Alternative 3 involves the development of three less intakes (approximately 60%
 11 volumetric reduction) as compared to Alternative 1A. As such, emissions generated by construction
 12 of Alternative 3 would be lower than Alternative 1A due to less construction activities. Localized
 13 health risk impacts resulting from construction of Intakes 3, 4, and 5 would be less or not occur due
 14 to absence in the development of these project features. Based on the emissions inventory
 15 conducted for the air quality analysis, the development of Alternative 3 would result in 36% less
 16 PM10 emissions and 35% less PM2.5 emissions, as compared with Alternative 1A.

17 All annual PM10 and PM2.5 concentrations were found to be less than SMAQMD's annual thresholds
 18 for Alternative 1A. Because Alternative 3 would require less construction activity and generate
 19 fewer emissions than Alternative 1A, annual PM10 and PM2.5 concentrations from the development
 20 of Alternative 3 would also be less than the respective SMAQMD annual thresholds. However, as
 21 shown in Table 22-14, the maximum predicted 24-hour PM10 concentration for Alternative 1A
 22 would exceed SMAQMD's threshold of 2.5 µg/m³. The modeled exceedances occur at 225 receptor
 23 locations near intakes and intake work areas. Because Alternative 3 would not involve the
 24 development of Intakes 3, 4, and 5, emissions contributions from these intakes would not occur.
 25 However, it is anticipated that Alternative 3 would still result in 24-hour PM10 exceedances, but
 26 primarily in the vicinity of Intakes 1 and 2, and at fewer receptor locations than Alternative 1A. The
 27 exceedances would be temporary and occur intermittently due to soil disturbance.

28 DWR has identified several environmental commitments to reduce construction-related particulate
 29 matter in the SMAQMD (see Appendix 3B, *Environmental Commitments*). While these commitments
 30 will reduce localized particulate matter emissions, concentrations at adjacent receptor locations
 31 would still exceed SMAQMD's 24-hour PM10 threshold. Receptors exposed to PM10 concentrations
 32 in excess of SMAQMD's threshold could experience increased risk for adverse human health effects.
 33 Mitigation Measure AQ-9 is available to address this effect.

34 **CEQA Conclusion:** Respirable particulates pose a human health hazard by bypassing the defenses
 35 within the mucous ciliary system and entering deep lung tissue. Construction of Alternative 3 would
 36 result in the short-term exposure of receptors to PM10 concentrations that exceed SMAQMD
 37 threshold. This would be a significant impact. Mitigation Measure AQ-9 outlines a tiered strategy to
 38 reduce PM10 concentrations and public exposure to a less-than-significant level.

39 **Mitigation Measure AQ-9: Implement Measures to Reduce Re-Entrained Road Dust and**
 40 **Receptor Exposure to PM2.5 and PM10**

41 Please see Mitigation Measure AQ-9 under Impact AQ-9 in the discussion of Alternative 1A.

1 **Impact AQ-10: Exposure of Sensitive Receptors to Health Hazards from Localized Particulate**
 2 **Matter in Excess of YSAQMD's Health-Based Concentration Thresholds**

3 **NEPA Effects:** Table 22-15 under Alternative 1A shows that the maximum predicted PM2.5 and
 4 PM10 concentrations are less than YSAQMD's adopted thresholds. Because Alternative 3 would
 5 require less construction activity and generate fewer emissions than Alternative 1A, annual PM10
 6 and PM2.5 concentrations from the development of Alternative 3 would also be less than the
 7 respective YSAQMD annual thresholds. The project would also implement all air district
 8 recommended onsite fugitive dust controls, such as regular watering. Accordingly, this alternative
 9 would not expose sensitive receptors to adverse levels of localized particulate matter
 10 concentrations.

11 **CEQA Conclusion:** Respirable particulates pose a human health hazard by bypassing the defenses
 12 within the mucous ciliary system and entering deep lung tissue. Construction of Alternative 1A
 13 would result in PM2.5 and PM10 concentrations at receptor locations that are below the significance
 14 thresholds established by the YSAQMD. Since Alternative 3 results in fewer overall emissions,
 15 localized particulate matter concentrations at analyzed receptors would not result in significant
 16 human health impacts. No mitigation is required.

17 **Impact AQ-11: Exposure of Sensitive Receptors to Health Hazards from Localized Particulate**
 18 **Matter in Excess of BAAQMD's Health-Based Concentration Thresholds**

19 **NEPA Effects:** Table 22-16 under Alternative 1A shows that the maximum predicted PM2.5
 20 concentrations are less than BAAQMD's adopted thresholds. Because Alternative 3 would require
 21 less construction activity and generate fewer emissions than Alternative 1A, PM2.5 concentrations
 22 from the development of Alternative 3 would also be less than the respective BAAQMD annual
 23 thresholds. The project would also implement all air district-recommended onsite fugitive dust
 24 controls, such as regular watering. Accordingly, this alternative would not expose sensitive
 25 receptors to adverse levels of localized particulate matter concentrations.

26 **CEQA Conclusion:** Respirable particulates pose a human health hazard by bypassing the defenses
 27 within the mucous ciliary system and entering deep lung tissue. Construction of Alternative 1A
 28 would result in PM2.5 concentrations at receptor locations that are below the significance
 29 thresholds established by the BAAQMD. Since Alternative 3 results in fewer overall emissions,
 30 localized particulate matter concentrations at analyzed receptors would not result in significant
 31 human health impacts. No mitigation is required.

32 **Impact AQ-12: Exposure of Sensitive Receptors to Health Hazards from Localized Particulate**
 33 **Matter in Excess of SJVAPCD's Health-Based Concentration Thresholds**

34 **NEPA Effects:** Table 22-17 under Alternative 1A shows that with exception of 24-hour PM10,
 35 maximum predicted PM2.5 and PM10 concentrations are less than SJVAPCD's adopted thresholds.
 36 The 24-hour PM10 concentrations attributable to the project would exceed the SJVAPCD's
 37 significance threshold at four receptor locations. Emissions from the tunnel construction activities
 38 and concrete batch plant contribute to the exceedance at this location. Although Alternative 3 would
 39 result in less construction activities than Alternative 1A, it is anticipated that receptors exposed to
 40 emissions from the concrete batch plant and tunnel activities would remain impacted. Accordingly,
 41 this alternative would expose a sensitive receptor to adverse levels of localized particulate matter
 42 concentrations. Mitigation Measure AQ-9 is available to address this effect.

1 **CEQA Conclusion:** Respirable particulates pose a human health hazard by bypassing the defenses
 2 within the mucous ciliary system and entering deep lung tissue. Construction of Alternative 3 would
 3 result in the short-term exposure of receptors to PM10 concentrations that exceed SJVAPCD's
 4 threshold. This would be a significant impact. Mitigation Measure AQ-9 outlines a tiered strategy to
 5 reduce PM10 concentrations and public exposure to a less-than-significant level.

6 **Mitigation Measure AQ-9: Implement Measures to Reduce Re-Entrained Road Dust and**
 7 **Receptor Exposure to PM2.5 and PM10**

8 Please see Mitigation Measure AQ-9 under Impact AQ-9 in the discussion of Alternative 1A.

9 **Impact AQ-13: Exposure of Sensitive Receptors to Health Hazards from Localized Carbon**
 10 **Monoxide**

11 **NEPA Effects:** Continuous engine exhaust may elevate localized CO concentrations. Receptors
 12 exposed to these CO "hot-spots" may have a greater likelihood of developing adverse health effects
 13 (as described in Section 22.1.2). CO hot-spots are typically observed at heavily congested
 14 intersections where a substantial number of gasoline-powered vehicles idle for prolonged durations
 15 throughout the day. Construction sites are less likely to result in localized CO hot-spots due to the
 16 nature of construction activities (Sacramento Metropolitan Air Quality Management District 2014),
 17 which normally utilize diesel-powered equipment for intermittent or short durations. Moreover,
 18 construction sites must comply with the Occupational Safety and Health Administration's (OSHA) CO
 19 exposure standards for onsite workers. Unlike regional pollutants (e.g., ROG and NO_x), CO
 20 concentrations also dissipate as a function of distance and will therefore be lower at offsite receptor
 21 locations. Accordingly, given that construction activities typically do not result in CO hot-spots,
 22 onsite concentrations must comply with OSHA standards, and CO levels dissipate as a function of
 23 distance, equipment-generated CO emissions (see Table 22-90) are not anticipated to result in
 24 adverse health hazards to sensitive receptors.

25 Construction traffic may contribute to increased roadway congestion, which could lead to conditions
 26 conducive to CO hot-spot formation. As shown in Table 19-8, the highest peak hour traffic volumes
 27 under BPBGPP—12,567 vehicles per hour—would occur on westbound Interstate 80 between
 28 Suisun Valley Road and State Route 12.³⁷ This is about half of the congested traffic volume modeled
 29 by BAAQMD (24,000 vehicles per hour) that would be needed to contribute to a localized CO hot-
 30 spot, and less than half of the traffic volume modeled by SMAQMD (31,600 vehicles per hour). The
 31 BAAQMD's and SMAQMD's CO screening criteria were developed based on County average vehicle
 32 fleets that are primarily comprised of gasoline vehicles. Construction vehicles would be
 33 predominantly diesel trucks, which generate fewer CO emissions per idle-hour and vehicle mile
 34 traveled than gasoline-powered vehicles. Accordingly, the air district screening thresholds provide a
 35 conservative evaluation threshold for the assessment of potential CO emissions impacts during
 36 construction.

37 Based on the above analysis, even if all 12,567 vehicles on the modeled traffic segment drove
 38 through the same intersection in the peak hour, CO concentrations adjacent to the traveled way

³⁷ The above volumes are based on the traffic analysis conducted for Alternative 1A. Since few vehicles would be required under Alternative 3, traffic impacts would likely be less than those estimated for Alternative 1A.

1 would not exceed the CAAQS or NAAQS according to BAAQMD's and SMAQMD's screening criteria.
 2 Thus, construction traffic is not anticipated to result in adverse health hazards to sensitive
 3 receptors.

4 **CEQA Conclusion:** Continuous engine exhaust may elevate localized CO concentrations. Receptors
 5 exposed to these CO "hot-spots" may have a greater likelihood of developing adverse health effects.
 6 Construction sites are less likely to result in localized CO hot-spots due to the nature of construction
 7 activities (Sacramento Metropolitan Air Quality Management District 2014), which normally utilize
 8 diesel-powered equipment for intermittent or short durations. Moreover, construction sites must
 9 comply with the OSHA CO exposure standards for onsite workers. Accordingly, given that
 10 construction activities typically do not result in CO hot-spots, onsite concentrations must comply
 11 with OSHA standards, and CO levels dissipate as a function of distance, equipment-generated CO
 12 emissions are not anticipated to result in significant health hazards to sensitive receptors. Similarly,
 13 peak-hour construction traffic on local roadways would not exceed BAAQMD's or SMAQMD's
 14 conservative screening criteria for the formation potential CO hot-spots. This impact would be less
 15 than significant. No mitigation is required.

16 **Impact AQ-14: Exposure of Sensitive Receptors to Health Hazards from Diesel Particulate**
 17 **Matter in Excess of SMAQMD's Chronic Non-Cancer and Cancer Risk Thresholds**

18 **NEPA Effects:** As shown in Table 22-18, Alternative 1A would not exceed the SMAQMD's thresholds
 19 for chronic non-cancer hazard or cancer risk. Because Alternative 3 would require less construction
 20 activity and generate fewer emissions than Alternative 1A, chronic non-cancer hazard and cancer
 21 risk from the development of Alternative 3 would also be less than the respective SMAQMD
 22 significance thresholds. Accordingly, this alternative would not expose sensitive receptors to
 23 adverse levels of DPM to result in excessive chronic non-cancer hazards or cancer risk.

24 **CEQA Conclusion:** DPM generated during construction poses inhalation-related chronic non-cancer
 25 hazard and cancer risk if adjacent receptors are exposed to significant concentrations for prolonged
 26 durations. DPM generated during Alternative 3 construction would not exceed the SMAQMD's
 27 chronic non-cancer hazard or cancer risk threshold. Therefore, this impact for DPM emissions would
 28 be less than significant. No mitigation is required.

29 **Impact AQ-15: Exposure of Sensitive Receptors to Health Hazards from Diesel Particulate**
 30 **Matter in Excess of YSAQMD's Chronic Non-Cancer and Cancer Risk Thresholds**

31 **NEPA Effects:** As shown in Table 22-19, Alternative 1A would not exceed the YSAQMD's thresholds
 32 for chronic non-cancer hazard or cancer risk. Because Alternative 3 would require less construction
 33 activity and generate fewer emissions than Alternative 1A, chronic non-cancer hazard and cancer
 34 risk from the development of Alternative 3 would also be less than the respective YSAQMD
 35 significance thresholds. Accordingly, this alternative would not expose sensitive receptors to
 36 adverse levels of DPM to result in excessive chronic non-cancer hazards or cancer risk.

37 **CEQA Conclusion:** DPM generated during construction poses inhalation-related chronic non-cancer
 38 hazard and cancer risk if adjacent receptors are exposed to significant concentrations for prolonged
 39 durations. The DPM generated during Alternative 3 construction would not exceed the YSAQMD's
 40 chronic non-cancer or cancer thresholds, and thus would not expose sensitive receptors to
 41 substantial health hazards. Therefore, this impact for DPM emissions would be less than significant.
 42 No mitigation is required.

1 **Impact AQ-16: Exposure of Sensitive Receptors to Health Hazards from Diesel Particulate**
 2 **Matter in Excess of BAAQMD's Chronic Non-Cancer and Cancer Risk Thresholds**

3 **NEPA Effects:** As shown in Table 22-20, Alternative 1A would not exceed the BAAQMD's thresholds
 4 for chronic non-cancer hazard; however, it would exceed BAAQMD's cancer risk threshold. The
 5 primary emission sources for these exceedances are from a project haul route, control structure
 6 work area and potential spoil area. While the impact of Alternative 3 would be less than Alternative
 7 1A, Alternative 3 may still expose the five sensitive receptors to adverse levels of carcinogenic DPM
 8 concentrations.

9 Mitigation Measure AQ-16 would be available to reduce exposure to substantial cancer risk by
 10 relocating affected receptors. Although Mitigation Measure AQ-16 would reduce the severity of this
 11 effect, the BDCP proponents are not solely responsible for implementation of the measure. If a
 12 landowner chooses not to accept DWR's offer of relocation assistance, an adverse effect in the form
 13 excess cancer risk above air district thresholds would occur. Therefore, this effect would be adverse.
 14 If, however, all landowners accept DWR's offer of relocation assistance, effects would not be
 15 adverse.

16 **CEQA Conclusion:** DPM generated during construction poses inhalation-related chronic non-cancer
 17 hazard and cancer risk if adjacent receptors are exposed to significant concentrations for prolonged
 18 durations. The DPM generated during Alternative 3 construction would not exceed the BAAQMD's
 19 chronic non-cancer hazard threshold; however, it would exceed the BAAQMD's cancer thresholds.
 20 Therefore, this impact for DPM emissions would be significant.

21 Mitigation Measure AQ-16 would be available to reduce exposure to substantial cancer risk by
 22 relocating affected receptors. Although Mitigation Measure AQ-16 would reduce the severity of this
 23 effect, the BDCP proponents are not solely responsible for implementation of the measure. If a
 24 landowner chooses not to accept DWR's offer of relocation assistance, a significant impact in the
 25 form excess cancer risk above air district thresholds would occur. Therefore, this effect would be
 26 significant and unavoidable. If, however, all landowners accept DWR's offer of relocation assistance,
 27 the impact would be less than significant.

28 **Mitigation Measure AQ-16: Relocate Sensitive Receptors to Avoid Excess Cancer Risk**

29 Please see Mitigation Measure AQ-16 under Impact AQ-16 in the discussion of Alternative 1A.

30 **Impact AQ-17: Exposure of Sensitive Receptors to Health Hazards from Diesel Particulate**
 31 **Matter in Excess of SJVAPCD's Chronic Non-Cancer and Cancer Risk Thresholds**

32 **NEPA Effects:** Table 22-21 under Alternative 1A shows that the maximum predicted chronic non-
 33 cancer hazard and cancer risk associated with the project are less than SJVAPCD's adopted
 34 thresholds. Because Alternative 3 would require less construction activity and generate fewer
 35 emissions than Alternative 1A, chronic non-cancer hazard and cancer risk from the development of
 36 Alternative 3 would also be less than the respective SJVAPCD significance thresholds. Accordingly,
 37 this alternative would not expose sensitive receptors to adverse levels of DPM such as would result
 38 in chronic non-cancer hazards or cancer risk.

39 **CEQA Conclusion:** DPM generated during construction poses inhalation-related chronic non-cancer
 40 hazard and cancer risk if adjacent receptors are exposed to significant concentrations for prolonged
 41 durations. The DPM generated during Alternative 3 construction would not exceed the SJVAPCD's
 42 chronic non-cancer or cancer thresholds, and thus would not expose sensitive receptors to

1 substantial pollutant concentrations. Therefore, this impact for DPM emissions would be less than
2 significant. No mitigation is required.

3 **Impact AQ-18: Exposure of Sensitive Receptors to *Coccidioides immitis* (Valley Fever)**

4 **NEPA Effects:** As discussed under Alternative 1A, earthmoving activities during construction could
5 release *C. immitis* spores if filaments are present and other soil chemistry and climatic conditions
6 are conducive to spore development. Receptors adjacent to the construction area may therefore be
7 exposed to increase risk of inhaling *C. immitis* spores and subsequent development of Valley Fever.
8 Dust-control measures are the primary defense against infection (United States Geological Survey
9 2000). Implementation of advanced air-district recommended fugitive dust controls outlined in
10 Appendix 3B, *Environmental Commitments*, would avoid dusty conditions and reduce the risk of
11 contracting Valley Fever through routine watering and other controls. Therefore, this alternative's
12 effect of exposure of sensitive receptors to increased Valley Fever risk during construction would
13 not be adverse.

14 **CEQA Conclusion:** Construction of the water conveyance facility would involve earthmoving
15 activities that could release *C. immitis* spores if filaments are present and other soil chemistry and
16 climatic conditions are conducive to spore development. Receptors adjacent to the construction area
17 may therefore be exposed to increase risk of inhaling *C. immitis* spores and subsequent development
18 of Valley Fever. Implementation of air-district recommended fugitive dust controls outlined in
19 Appendix 3B, *Environmental Commitments*, would avoid dusty conditions and reduce the risk of
20 contracting Valley Fever through routine watering and other controls. Therefore, this impact would
21 be less than significant. No mitigation is required.

22 **Impact AQ-19: Creation of Potential Odors Affecting a Substantial Number of People during** 23 **Construction or Operation of the Proposed Water Conveyance Facility**

24 **NEPA Effects:** As discussed under Alternative 1A, odors from construction activities would be
25 localized and generally confined to the immediate area surrounding the construction site. Moreover,
26 odors would be temporary and localized, and they would cease once construction activities have
27 been completed. Thus, it is not anticipated that construction of CM1 would create objectionable
28 odors from construction equipment or asphalt paving.

29 Construction of the water conveyance facility would require removal of subsurface material during
30 tunnel excavation and sediment removal. As discussed under Alternative 1A, geotechnical tests
31 indicate that VOC levels in Plan Area soils are below the method detection limits, indicating that
32 organic decay of exposed RTM and sediment will be relatively low (URS 2014). Moreover, drying
33 and stockpiling of the removed RTM and sediment will occur under aerobic conditions, which will
34 further limit any potential decomposition and associated malodorous products. Accordingly, it is not
35 anticipated that tunnel and sediment excavation would create objectionable odors.

36 Typical facilities known to produce odors include landfills, wastewater treatment plants, food
37 processing facilities, and certain agricultural activities. Alternative 3 would not result in the addition
38 of facilities associated with odors, and as such, long-term operation of the water conveyance facility
39 would not result in objectionable odors.

40 **CEQA Conclusion:** Alternative 3 would not result in the addition of major odor producing facilities.
41 Diesel emissions during construction could generate temporary odors, but these would quickly
42 dissipate and cease once construction is completed. Likewise, potential odors generated during

1 asphalt paving would be addressed through mandatory compliance with air district rules and
 2 regulations. While tunnel excavation would unearth substantial quantities of RTM, geotechnical
 3 tests indicate that soils in the Plan Area have relatively low organic constituents. Moreover, drying
 4 and stockpiling of the removed RTM will occur under aerobic conditions, which will further limit
 5 any potential decomposition and associated malodorous products. Accordingly, the impact of
 6 exposure of sensitive receptors to potential odors would be less than significant. No mitigation is
 7 required.

8 **Impact AQ-20: Generation of Criteria Pollutants in the Excess of Federal *De Minimis***
 9 **Thresholds from Construction and Operation and Maintenance of the Proposed Water**
 10 **Conveyance Facility**

11 **NEPA Effects:** EPA's General Conformity Rule (40 CFR Parts 51 and 93) only applies to Federal
 12 actions that are taken in EPA-designated "nonattainment" or "maintenance" areas. Accordingly, as
 13 outlined in Section III.A of the General Conformity Rule, "only actions which cause emissions in
 14 designated nonattainment and maintenance areas are subject to the regulations". Criteria pollutant
 15 emissions resulting from construction and operation of Alternative 1A in the SFNA, SJVAB, and
 16 SFBAAB are presented in Table 22-92. Exceedances of the federal *de minimis* thresholds are shown
 17 in underlined text.

18 **Sacramento Federal Nonattainment Area**

19 As shown in Table 22-92, implementation of Alternative 3 would exceed the following SFNA federal
 20 *de minimis* thresholds:

- 21 ● ROG: 2024
- 22 ● NO_x: 2018–2028

23 ROG and NO_x are precursors to ozone and NO_x is a precursor to PM, for which the SFNA is in
 24 nonattainment for the NAAQS. Since project emissions exceed the federal *de minimis* thresholds for
 25 ROG and NO_x, a general conformity determination must be made to demonstrate that total direct
 26 and indirect emissions of ROG and NO_x would conform to the appropriate SFNA SIP for each year of
 27 construction in which the *de minimis* thresholds are exceeded.

28 NO_x is also a precursor to PM and can contribute to PM formation. As discussed above, Sacramento
 29 County is currently designated maintenance for the PM10 NAAQS and portions of the SVAB are
 30 designated nonattainment for the PM2.5 NAAQS. NO_x emissions in excess of 100 tons per year in
 31 Sacramento County trigger a secondary PM10 precursor threshold, whereas NO_x emissions in excess
 32 of 100 tons per year in the SVAB trigger a secondary PM2.5 precursor threshold. Since NO_x
 33 emissions can contribute to PM formation, NO_x emissions in excess of these secondary precursor
 34 thresholds could conflict with the applicable PM10 and PM2.5 SIPs. Accordingly, NO_x offsets pursued
 35 for the purposes of general conformity for those years in which NO_x emissions exceed 100 tons must
 36 occur within the federally designated PM2.5 nonattainment and PM10 maintenance areas of the
 37 SVAB.

38 As shown in Table 22-90, NO_x emissions generated by construction activities in SMAQMD
 39 (Sacramento County) would exceed 100 tons per year between 2023 and 2027. The project
 40 therefore triggers the secondary PM10 precursor threshold, requiring all NO_x offsets for 2023
 41 through 2027 to occur within Sacramento County.

1 Given the magnitude of NO_x emissions and the limited geographic scope available for offsets in 2023
2 through 2027 (Sacramento County), neither Mitigation Measures AQ-1a nor 1b could feasibly reduce
3 NO_x emissions to net zero for the purposes of general conformity.³⁸ This impact would be adverse.
4 In the event that Alternative 3 is selected as the APA, Reclamation, USFWS, and NMFS would need to
5 demonstrate that conformity is met for NO_x and secondary PM10 formation through a local air
6 quality modeling analysis (i.e., dispersion modeling) or other acceptable methods to ensure project
7 emissions do not cause or contribute to any new violations of the NAAQS or increase the frequency
8 or severity of any existing violations.

9 **Mitigation Measure AQ-1a: Mitigate and Offset Construction-Generated Criteria Pollutant**
10 **Emissions within the SFNA to Net Zero (0) for Emissions in Excess of General Conformity**
11 ***De Minimis* Thresholds (Where Applicable) and to Quantities below Applicable CEQA**
12 **Thresholds for Other Pollutants**

13 Please see Mitigation Measure AQ-1a under Impact AQ-1 in the discussion of Alternative 1A.

14 **Mitigation Measure AQ-1b: Develop an Alternative or Complementary Offsite Mitigation**
15 **Program to Mitigate and Offset Construction-Generated Criteria Pollutant Emissions**
16 **within the SFNA to Net Zero (0) for Emissions in Excess of General Conformity *De Minimis***
17 **Thresholds (Where Applicable) and to Quantities below Applicable CEQA Thresholds for**
18 **Other Pollutants**

19 Please see Mitigation Measure AQ-1b under Impact AQ-1 in the discussion of Alternative 1A.

³⁸ The secondary PM precursor thresholds are triggered through the General Conformity Regulation (40 CFR 93.153 (a)(1)). Accordingly, confinement of the geographic scope for available offsets only applies to the General Conformity determination and does not influence mitigation feasibility for Impacts AQ-1 or AQ-28.

1 **Table 22-92. Criteria Pollutant Emissions from Construction and Operation of Alternative 3 in**
 2 **Nonattainment and Maintenance Areas of the SFNA, SJVAB, and SFBAAB (tons/year)**

Year	Sacramento Federal Nonattainment Area					
	ROG	NO _x ^a	CO ^b	PM10 ^c	PM2.5	SO ₂
2016	0	0	0	0	0	0
2017	0	0	0	0	0	0
2018	1	<u>12</u>	<1	6	1	<1
2019	3	<u>16</u>	<1	18	3	<1
2020	6	<u>50</u>	<1	26	4	<1
2021	8	<u>73</u>	2	38	6	<1
2022	11	<u>95</u>	4	45	8	<1
2023	19	<u>152</u>	4	60	10	1
2024	<u>25</u>	<u>194</u>	4	69	13	1
2025	22	<u>162</u>	2	48	10	1
2026	21	<u>148</u>	2	43	9	1
2027	17	<u>128</u>	2	47	9	1
2028	4	<u>29</u>	2	23	4	<1
2029	<1	3	<1	3	<1	<1
ELT	0.10	0.61	1.23	0.21	0.06	<0.01
LLT	0.09	0.51	1.17	0.20	0.05	<0.01
<i>De Minimis</i>	<i>25</i>	<i>25</i>	<i>100</i>	<i>100</i>	<i>100</i>	<i>100</i>
Year	San Joaquin Valley Air Basin					
	ROG	NO _x ^a	CO ^b	PM10	PM2.5	SO ₂
2016	0	0	0	2	<1	0
2017	0	0	0	0	0	0
2018	1	5	0	10	1	<1
2019	9	<u>64</u>	0	15	2	<1
2020	<u>15</u>	<u>110</u>	0	29	5	0
2021	<u>24</u>	<u>171</u>	0	46	7	1
2022	<u>22</u>	<u>146</u>	0	28	5	<1
2023	<u>20</u>	<u>119</u>	0	15	3	<1
2024	<u>19</u>	<u>109</u>	0	14	3	<1
2025	<u>12</u>	<u>72</u>	0	12	2	<1
2026	5	<u>29</u>	0	3	1	<1
2027	<1	<1	0	<1	<1	<1
2028	0	0	0	0	0	0
2029	0	0	0	0	0	0
ELT	0.01	0.07	0.13	0.02	<0.01	<0.01
LLT	0.01	0.06	0.12	0.01	<0.01	<0.01
<i>De Minimis</i>	<i>10</i>	<i>10</i>	<i>100</i>	<i>100</i>	<i>100</i>	<i>100</i>

Year	San Francisco Bay Area Air Basin					
	ROG	NO _x ^a	CO ^b	PM10 ^d	PM2.5	SO ₂
2016	0	0	0	-	0	0
2017	0	0	0	-	0	0
2018	<1	1	<1	-	<1	<1
2019	2	14	<1	-	1	<1
2020	3	22	1	-	1	<1
2021	4	30	2	-	1	<1
2022	4	33	3	-	2	<1
2023	7	54	4	-	4	<1
2024	11	80	4	-	5	1
2025	7	48	3	-	3	<1
2026	5	37	2	-	3	<1
2027	3	20	2	-	3	<1
2028	<1	2	1	-	1	<1
2029	<1	<1	<1	-	<1	<1
ELT	0.01	0.08	0.14	-	0.01	<0.01
LLT	0.01	0.07	0.14	-	0.01	<0.01
<i>De Minimis</i>	<i>100</i>	<i>100</i>	<i>100</i>	<i>-</i>	<i>100</i>	<i>100</i>

^a NO_x emissions in excess of 100 tons per year within federally designated PM10 and PM2.5 nonattainment or maintenance areas trigger a secondary PM10 and PM2.5 precursor threshold. NO_x emissions in excess of this secondary threshold could conflict with the applicable PM10 and PM2.5 SIPs. Accordingly, NO_x offsets pursued for the purposes of general conformity for those years in which NO_x emissions exceed 100 tons must occur within the federally designated PM2.5 nonattainment and PM10 maintenance areas, as applicable.

^b The proposed water conveyance facility is located within a federally designated CO attainment area. Accordingly, CO emissions generated by construction of CM1 are not subject to the General Conformity Rule and are excluded from the emissions summary and general conformity analysis (40 CFR Part 51 and 93, Section III.A). Emissions presented in the table are limited those generated by haul trucks, which would occur in federally designated CO maintenance area.

^c There are no federally designated PM10 maintenance areas in Yolo County. Accordingly, PM10 emissions generated by construction of CM1 in Yolo County are not subject to the General Conformity Rule and are excluded from the emissions summary and general conformity analysis for the SFNA (40 CFR Part 51 and 93, Section III.A). Emissions presented in the table are limited those generated within Sacramento County.

^d There are no federally designated PM10 nonattainment or maintenance areas in the SFBAAB. Accordingly, PM10 emissions generated by construction of CM1 are not subject to the General Conformity Rule and are excluded from the emissions summary and general conformity analysis (40 CFR Part 51 and 93, Section III.A).

1

2 **San Joaquin Valley Air Basin**

3 As shown in Table 22-92, implementation of Alternative 3 would exceed the following SJVAB federal
4 *de minimis* thresholds:

- 5 ● ROG: 2020–2025
- 6 ● NO_x: 2019–2026

1 ROG and NO_x are precursors to ozone and NO_x is a precursor to PM, for which the SJVAB is in
 2 nonattainment for the NAAQS. Since project emissions exceed the federal *de minimis* threshold for
 3 ROG and NO_x, a general conformity determination must be made to demonstrate that total direct
 4 and indirect emissions of ROG and NO_x would conform to the appropriate SJVAB SIP for each year of
 5 construction in which the *de minimis* thresholds are exceeded.

6 NO_x is also a precursor to PM and can contribute to PM formation. As discussed above, the SJVAB is
 7 currently designated maintenance for the PM₁₀ NAAQS and nonattainment for the PM_{2.5} NAAQS.
 8 NO_x emissions in excess of 100 tons per year trigger a secondary PM precursor threshold, and could
 9 conflict with the applicable PM₁₀ and PM_{2.5} SIPs. As shown in Table 22-92, NO_x emissions
 10 generated by construction activities in the SJVAB would exceed 100 tons per year between 2020 and
 11 2024. NO_x offsets pursued for the purposes of general conformity for those years in which NO_x
 12 emissions exceed 100 tons must occur within the federally designated PM_{2.5} nonattainment and
 13 PM₁₀ maintenance areas of the SJVAB, which are consistent with the larger nonattainment
 14 boundary for ozone.

15 As shown in Appendix 22E, *General Conformity Determination*, Attachment 22E-1, SJVAPCD confirms
 16 that sufficient emissions reduction credits would be available to fully offset ROG and NO_x emissions
 17 in excess of the federal *de minimis* thresholds zero through implementation of Mitigation Measures
 18 AQ-4a and 4b. Mitigation Measures AQ-4a and 4b will ensure the requirements of the mitigation and
 19 offset program are implemented and conformity requirements for ROG and NO_x are met, should
 20 Alternative 3 be selected as the APA.

21 **Mitigation Measure AQ-4a: Mitigate and Offset Construction-Generated Criteria Pollutant**
 22 **Emissions within SJVAPCD/SJVAB to Net Zero (0) for Emissions in Excess of General**
 23 **Conformity *De Minimis* Thresholds (Where Applicable) and to Quantities below**
 24 **Applicable SJVAPCD CEQA Thresholds for Other Pollutants**

25 Please see Mitigation Measure AQ-4a under Impact AQ-4 in the discussion of Alternative 1A.

26 **Mitigation Measure AQ-4b: Develop an Alternative or Complementary Offsite Mitigation**
 27 **Program to Mitigate and Offset Construction-Generated Criteria Pollutant Emissions**
 28 **within the SJVAPCD/SJVAB to Net Zero (0) for Emissions in Excess of General Conformity**
 29 ***De Minimis* Thresholds (Where Applicable) and to Quantities below Applicable SJVAPCD**
 30 **CEQA Thresholds for Other Pollutants**

31 Please see Mitigation Measure AQ-4b under Impact AQ-4 in the discussion of Alternative 1A.

32 ***San Francisco Bay Area Air Basin***

33 As shown in Table 22-92, implementation of Alternative 3 would not exceed any of the SFBAAB
 34 federal *de minimis* thresholds. Accordingly, a general conformity determination is not required as
 35 total direct and indirect emissions would conform to the appropriate SFBAAB SIPs.

36 ***CEQA Conclusion:*** SFNA and SJVAB are classified as nonattainment areas with regard to the ozone
 37 NAAQS and the impact of increases in criteria pollutant emissions above the air basin *de minimis*
 38 thresholds could conflict with or obstruct implementation of the applicable air quality plans. Since
 39 construction emissions in the SFNA and SJVAB would exceed the *de minimis* thresholds for ROG and
 40 NO_x, this impact would be significant.

1 Mitigation Measures AQ-4a and AQ-4b would ensure project emissions would not result in an
 2 increase in regional ROG or NO_x in the SJVAB. These measures would therefore ensure total direct
 3 and indirect ROG and NO_x emissions generated by the project would conform to the appropriate
 4 SJVAB SIPs by offsetting the action's emissions in the same or nearby area to net zero. Accordingly,
 5 impacts would be less than significant with mitigation in the SJVAB.

6 Although Mitigation Measures AQ-1a and AQ-1b would reduce NO_x in the SFNA, given the magnitude
 7 of NO_x emissions and the limited geographic scope available for offsets (Sacramento County),
 8 neither measure could feasibly reduce NO_x emissions to net zero for the purposes of general
 9 conformity. This impact would be significant and unavoidable in the SFNA.

10 Emissions generated within the SFBAAB would not exceed the SFBAAB de minimis thresholds and
 11 would therefore conform to the appropriate SFBAAB SIPs. No mitigation is required.

12 **Impact AQ-21: Generation of Cumulative Greenhouse Gas Emissions during Construction of** 13 **the Proposed Water Conveyance Facility**

14 **NEPA Effects:** GHG (CO₂, CH₄, N₂O, SF₆, and HFCs) emissions resulting from construction of
 15 Alternative 3 are presented in Table 22-93. Emissions with are presented with implementation of
 16 environmental commitments (see Appendix 3B, *Environmental Commitments*) and state mandates to
 17 reduce GHG emissions. State mandates include the RPS, LCFS, and Pavley. These mandates do not
 18 require additional action on the part of DWR, but will contribute to GHG emissions reductions. For
 19 example, Pavley and LCFS will improve the fuel efficiency of vehicles and reduce the carbon content
 20 of transportation fuels, respectively. Equipment used to construct the project will therefore be
 21 cleaner and less GHG intensive than if the state mandates had not been established.

22 Table 22-94 summarizes CO₂e emissions that would be generated in the BAAQMD, SMAQMD,
 23 SJVAPCD, and YSAQMD. The table does not include emissions from electricity generation as these
 24 emissions would be generated by power plants located throughout the state and the specific
 25 location of electricity-generating facilities is unknown (see discussion preceding this impact
 26 analysis). Due to the global nature of GHGs, the determination of effects is based on total emissions
 27 generated by construction (Table 22-93). GHG emissions presented in Table 22-93 are therefore
 28 provided for information purposes only.

29 Construction of Alternative 3 would generate a total of 1.8 million metric tons of GHG emissions
 30 after implementation of environmental commitments and state mandates. This is equivalent to
 31 adding 376,000 typical passenger vehicles to the road during construction (U.S. Environmental
 32 Protection Agency 2014e). As discussed in section 22.3.2, *Determination of Effects*, any increase in
 33 emissions above net zero associated with construction of the BDCP water conveyance features
 34 would be adverse. Accordingly, this effect would be adverse. Mitigation Measure AQ-21, which
 35 would develop a GHG Mitigation Program to reduce construction-related GHG emissions to net zero,
 36 is available address this effect.

1 **Table 22-93. GHG Emissions from Construction of Alternative 3 (metric tons/year)^a**

Year	Equipment and Vehicles (CO ₂ e)	Electricity (CO ₂ e)	Concrete Batching (CO ₂)	Total CO ₂ e
2016	0	0	335	335
2017	0	0	0	0
2018	6,978	600	41,658	49,236
2019	34,241	3,355	6,543	44,139
2020	60,925	16,114	40,658	117,697
2021	92,210	42,900	80,642	215,752
2022	102,778	60,242	122,225	285,245
2023	120,495	53,627	119,332	293,455
2024	137,213	55,937	142,771	335,921
2025	95,792	37,735	95,335	228,861
2026	72,708	13,472	22,846	109,026
2027	49,077	2,573	32,947	84,597
2028	14,754	68	6,482	21,304
2029	1,300	2	0	1,302
<i>Total</i>	<i>788,471</i>	<i>286,625</i>	<i>711,774</i>	<i>1,786,869</i>

^a Emissions estimates do not account for GHG flux from land disturbance. Surface and subsurface (e.g., tunneling) activities may oxidize peat soils, releasing GHG emissions. However, recent geotechnical surveys indicated that peat is negligible below 80 feet of depth. The tunnel will be placed below this range and the design adjusted if peat soils are discovered. Peat material encountered during surface excavation for non-tunnel work will be covered with top soil to reduce oxidation when needed.

Values may not total correctly due to rounding.

2 **CEQA Conclusion:** Construction of Alternative 3 would generate a total of 1.8 million metric tons of
3 GHG emissions. This is equivalent to adding 376,000 typical passenger vehicles to the road during
4 construction (U.S. Environmental Protection Agency 2014e). As discussed in section 22.3.2,
5 *Determination of Effects*, any increase in emissions above net zero associated with construction of
6 the BDCP water conveyance features would be significant. Mitigation Measure AQ-21 would develop
7 a GHG Mitigation Program to reduce construction-related GHG emissions to net zero. Accordingly,
8 this impact would be less-than-significant with implementation of Mitigation Measure AQ-21.

9 **Table 22-94. Total CO₂e Emissions from Construction of Alternative 3 by Air District (metric**
10 **tons/year)^a**

Air District	Equipment and Vehicles (CO ₂ e)	Concrete Batching (CO ₂) ^a	Total CO ₂ e ^b
SMAQMD	315,945	427,064	743,009
YSAQMD	28,488	0	28,488
SJVAPCD	281,182	142,355	423,536
BAAQMD	162,856	142,355	305,211

^a Emissions assigned to each air district based on the number of batching plants located in that air district.

^b Values may not total correctly due to rounding.

11

1 **Mitigation Measure AQ-21: Develop and Implement a GHG Mitigation Program to Reduce**
 2 **Construction Related GHG Emissions to Net Zero (0)**

3 Please see Mitigation Measure AQ-21 under Impact AQ-21 in the discussion of Alternative 1A.

4 **Impact AQ-22: Generation of Cumulative Greenhouse Gas Emissions from Operation and**
 5 **Maintenance of the Proposed Water Conveyance Facility and Increased Pumping**

6 **NEPA Effects:** Operation of Alternative 3 would generate direct and indirect GHG emissions. Sources
 7 of direct emissions include heavy-duty equipment, on road crew trucks, and employee vehicle
 8 traffic. Indirect emissions would be generated predominantly by electricity consumption required
 9 for pumping as well as, maintenance, lighting, and other activities.

10 Table 22-95 summarizes long-term operational GHG emissions associated with operations,
 11 maintenance, and increased SWP pumping. Emissions were quantified for both ELT and LLT
 12 conditions, although activities would take place annually until project decommissioning. Emissions
 13 include state mandates to reduce GHG emissions (described in Impact AQ-21) are presented (there
 14 are no BDCP specific operational environmental commitments). Total CO_{2e} emissions are compared
 15 to both the No Action Alternative (NEPA point of comparison) and Existing Conditions (CEQA
 16 baseline). As discussed in Section 22.3.1.2, equipment emissions are assumed to be zero under both
 17 the No Action Alternative (NEPA point of comparison) and Existing Conditions (CEQA baseline). The
 18 equipment emissions presented in Table 22-95 are therefore representative of project impacts for
 19 both the NEPA and CEQA analysis.

20 **Table 22-95. GHG Emissions from Operation, Maintenance, and Increased SWP Pumping,**
 21 **Alternative 3 (metric tons/year)**

Condition	Equipment CO _{2e}	Electricity CO _{2e}		Total CO _{2e}	
		NEPA Point of Comparison	CEQA Baseline	NEPA Point of Comparison	CEQA Baseline
ELT	302	-	184,015	-	184,316
LLT	298	43,634	13,616	43,932	13,914

Note: The *NEPA point of comparison* compares total CO_{2e} emissions after implementation of Alternative 3 to the No Action Alternative, whereas the *CEQA baseline* compares total CO_{2e} emissions to Existing Conditions.

22
 23 Table 22-96 summarizes equipment CO_{2e} emissions that would be generated in the BAAQMD,
 24 SMAQMD, and SJVAPCD (no operational emissions would be generated in the YSAQMD). The table
 25 does not include emissions from SWP pumping as these emissions would be generated by power
 26 plants located throughout the state (see discussion preceding this impact analysis). GHG emissions
 27 presented in Table 22-96 are therefore provided for information purposes only.

Table 22-96. Equipment CO₂e Emissions from Operation and Maintenance of Alternative 3 by Air District (metric tons/year)

Air District	ELT	LLT
SMAQMD	247	242
SJVAPCD	25	26
BAAQMD	30	31
Total	302	298

^a Emissions do not include emissions generated by increased SWP pumping.

SWP Operational and Maintenance GHG Emissions Analysis

Alternative 3 would add approximately 1,514 GWh³⁹ of additional net electricity demand to operation of the SWP each year assuming 2060 conditions. Conditions at 2060 (LLT) are used for this analysis because they yield the largest potential additional net electricity requirements and therefore represent the largest potential impact. This 1,514 GWh is based on assumptions of future conditions and operations and includes all additional energy required to operate the project with BDCP Alternative 3 including any additional energy associated with additional water being moved through the system.

In the CAP, DWR developed estimates of historical, current, and future GHG emissions. Figure 22-15 shows those emissions as they were projected in the CAP and how those emissions projections would change with the additional electricity demands needed to operate the SWP with the addition of BDCP Alternative 3. As shown in Figure 22-15, in 2024, the year BDCP Alternative 3 is projected to go online, DWR total emissions jump from around 912,000 metric tons of CO₂e to around 1.6 million metric tons of CO₂e. This elevated level is approximately 300,000 metric tons of CO₂e above DWR's designated GHG emissions reduction trajectory (red line, which is the linear interpolation between DWR's 2020 GHG emissions goal and DWR's 2050 GHG emissions goal.) The projection indicates that after the initial jump in emissions, existing GHG emissions reduction measures would bring the elevated GHG emissions level back down below DWR's GHG emissions reduction trajectory by 2042 and that DWR would still achieve its GHG emission reduction goal by 2050.

Because employing only DWR's existing GHG emissions reduction measures would result in a large initial increase in emissions and result in DWR emissions exceeding the emissions reduction trajectory for several years, DWR will take additional actions to reduce GHG emissions if BDCP Alternative 3 is implemented.

The CAP sets forth DWR's plan to manage its activities and operations to achieve its GHG emissions reduction goals. The CAP commits DWR to monitoring its emissions each year and evaluating its emissions every five years to determine whether it is on a trajectory to achieve its GHG emissions reduction goals. If it appears that DWR will not meet the GHG emission reduction goals established in the plan, DWR may make adjustments to existing emissions reduction measures, devise new measures to ensure achievement of the goals, or take other action. Given the scale of additional

³⁹ Estimated net energy demand differs slightly from what is presented in Chapter 21, *Energy*. This is because the above analysis includes energy needed for transmission and distribution of water along the Valley String, which is required to enable a comparison with the assumptions in DWR's CAP.

emissions that BDCP Alternative 3 would add to DWR's total GHG emissions, DWR has evaluated the most likely method that it would use to compensate for such an increase in GHG emissions: modification of DWR's REPP. The DWR REPP (GHG emissions reduction measure OP-1 in the CAP) describes the amount of additional renewable energy that DWR expects to purchase each year to meet its GHG emissions reduction goals. The REPP lays out a long-term strategy for renewable energy purchases, though actual purchases of renewable energy may not exactly follow the schedule in the REPP and will ultimately be governed by actual operations, measured emissions, and contracting.

Table 22-97 below shows how the REPP could be modified to accommodate BDCP Alternative 3, and shows that additional renewable energy resources could be purchased during years 2022–2025 over what was programmed in the original REPP. The net result of this change is that by 2026 DWR's energy portfolio would contain nearly 1,514 GWh of renewable energy (in addition to hydropower generated at SWP facilities). This amount is considerably larger than the amount called for in the original DWR REPP (1,492 compared to 792). In later years, 2031–2050, DWR would bring on slightly fewer additional renewable resources than programmed in the original REPP. Figure 22-16 shows how this modified Renewable Energy Procurement Plan would affect DWR's projected future emissions with BDCP Alternative 3.

Table 22-97. Changes in Expected Renewable Energy Purchases 2011–2050 (Alternative 3)

Year(s)	Additional GWh of Renewable Power Purchased (Above previous year)	
	Original CAP	New CAP
2011–2020	36	36
2021	72	72
2022–2025	72	247
2026–2030	72	72
2031–2040	108	63
2041–2050	144	74
Total Cumulative	52,236	61,111

As shown in the analysis above and consistent with the analysis contained in the CAP and associated Initial Study and Negative Declaration for the CAP, BDCP Alternative 3 would not adversely affect DWR's ability to achieve the GHG emissions reduction goals set forth in the CAP. Further, Alternative 3 would not conflict with any of DWR's specific action GHG emissions reduction measures and implements all applicable project level GHG emissions reduction measures as set forth in the CAP. BDCP Alternative 3 is therefore consistent with the analysis performed in the CAP. There would be no adverse effect.

CEQA Conclusion: SWP GHG emissions currently are below 1990 levels and achievement of the goals of the CAP means that total DWR GHG emissions will be reduced to 50% of 1990 levels by 2020 and to 80% of 1990 levels by 2050. The implementation of BDCP Alternative 3 would not affect DWR's established emissions reduction goals or baseline (1990) emissions and therefore would not result in a change in total DWR emissions that would be considered significant. Prior adoption of the CAP by DWR already provides a commitment on the part of DWR to make all necessary modifications to DWR's REPP (as described above) or any other GHG emission reduction measure in the CAP that are necessary to achieve DWR's GHG emissions reduction goals. Therefore no amendment to the approved CAP is necessary to ensure the occurrence of the additional GHG

1 emissions reduction activities needed to account for BDCP-related operational emissions. The effect
 2 of BDCP Alternative 3 with respect to GHG emissions is less than cumulatively considerable and
 3 therefore less than significant. No mitigation is required.

4 **Impact AQ-23: Generation of Cumulative Greenhouse Gas Emissions from Increased CVP**
 5 **Pumping as a Result of Implementation of CM1**

6 **NEPA Effects:** As previously discussed, DWR's CAP cannot be used to evaluate environmental
 7 impacts associated with increased CVP pumping, as emissions associated with CVP are not under
 8 DWR's control and are not included in the CAP. Accordingly, GHG emissions resulting from increased
 9 CVP energy use are evaluated separately from GHG emissions generated as a result of SWP energy
 10 use.

11 Under Alternative 3, operation of the CVP yields the generation of clean, GHG emissions-free,
 12 hydroelectric energy. This electricity is sold into the California electricity market or directly to
 13 energy users. Analysis of the No Action Alternative indicates that the CVP generates and will
 14 continue to generate all of the electricity needed to operate the CVP system and approximately
 15 3,500 GWh of excess hydroelectric energy that would be sold to energy users throughout California.
 16 Implementation of Alternative 3, however, would result in an increase of 153 GWh in the demand
 17 for CVP generated electricity, which would result in a reduction of 153 GWh or electricity available
 18 for sale from the CVP to electricity users. This reduction in the supply of GHG emissions-free
 19 electricity to the California electricity users could result in a potential indirect effect of the project,
 20 as these electricity users would have to acquire substitute electricity supplies that may result in GHG
 21 emissions (although additional conservation is also a possible outcome as well).

22 It is unknown what type of power source (e.g., renewable, natural gas) would be substituted for CVP
 23 electricity or if some of the lost power would be made up with higher efficiency. Given State
 24 mandates for renewable energy and incentives for energy efficiency, it is possible that a
 25 considerable amount of this power would be replaced by renewable resources or would cease to be
 26 needed as a result of higher efficiency. However, to ensure a conservative analysis, indirect
 27 emissions were quantified for the entire quantity of electricity (153 GWh) using the current and
 28 future statewide energy mix (adjusted to reflect RPS) (please refer to Appendix 22A, *Air Quality*
 29 *Analysis Methodology*, for additional detail on quantification methods).

30 Substitution of 153 GWh of electricity with a mix of sources similar to the current statewide mix
 31 would result in emissions of 42,816 metric tons of CO₂e; however, under expected future conditions
 32 (after full implementation of the RPS), emissions would be 33,271 metric tons of CO₂e.

33 Use of CVP hydroelectricity to meet increased electricity demand from operation of CVP facilities
 34 associated with Alternative 3 would reduce available CVP hydroelectricity to other California
 35 electricity users. Substitution of the lost electricity with electricity from other sources could
 36 indirectly result in an increase of GHG emissions that is comparable or larger than the level of GHG
 37 emissions that trigger mandatory GHG reporting for major facilities. As a result, these emissions
 38 could contribute to a cumulatively considerable effect and are therefore adverse. However, these
 39 emissions would be caused by dozens of independent electricity users, who had previously bought
 40 CVP power, making decisions about different ways to substitute for the lost power. These decisions
 41 are beyond the control of Reclamation or any of the other BDCP Lead Agencies. Further, monitoring
 42 to determine the actual indirect change in emissions as a result of BDCP actions would not be
 43 feasible. In light of the impossibility of predicting where any additional emissions would occur, as

1 well as Reclamation's lack of regulatory authority over the purchasers of power in the open market,
2 no workable mitigation is available or feasible.

3 **CEQA Conclusion:** Operation of the CVP is a federal activity beyond the control of any State agency
4 such as DWR, and the power purchases by private entities or public utilities in the private
5 marketplace necessitated by a reduction in available CVP-generated hydroelectric power are beyond
6 the control of the State, just as they are beyond the control of Reclamation. For these reasons, there
7 are no feasible mitigation measures that could reduce this potentially significant indirect impact,
8 which is solely attributable to operations of the CVP and not the SWP, to a less than significant level.
9 This impact is therefore determined to be significant and unavoidable.

10 **Impact AQ-24: Generation of Regional Criteria Pollutants from Implementation of CM2–CM11**

11 **NEPA Effects:** Table 22-29 summarizes potential construction and operational emissions that may
12 be generated by implementation of CM2–CM11. See the discussion of Impact AQ-24 under
13 Alternative 1A.

14 Criteria pollutants from restoration and enhancement actions could exceed applicable general
15 conformity *de minimis* levels and applicable local thresholds. The effect would vary according to the
16 equipment used in construction of a specific conservation measure, the location, the timing of the
17 actions called for in the conservation measure, and the air quality conditions at the time of
18 implementation; these effects would be evaluated and identified in the subsequent project-level
19 environmental analysis conducted for the CM2–CM11 restoration and enhancement actions. The
20 effect of increases in emissions during implementation of CM2–CM11 in excess of applicable general
21 conformity *de minimis* levels and air district regional thresholds (Table 22-8) could violate air basin
22 SIPs and worsen existing air quality conditions. Mitigation Measure AQ-24 would be available to
23 reduce this effect, but emissions would still be adverse.

24 **CEQA Conclusion:** Construction and operational emissions associated with the restoration and
25 enhancement actions would result in a significant impact if the incremental difference, or increase,
26 relative to Existing Conditions exceeds the applicable local air district thresholds shown in Table 22-
27 8; these effects are expected to be further evaluated and identified in the subsequent project-level
28 environmental analysis conducted for the CM2–CM11 restoration and enhancement actions.
29 Mitigation Measure AQ-24 would be available to reduce this effect, but may not be sufficient to
30 reduce emissions below applicable air quality management district thresholds (see Table 22-8).
31 Consequently, this impact would be significant and unavoidable.

32 **Mitigation Measure AQ-24: Develop an Air Quality Mitigation Plan (AQMP) to Ensure Air** 33 **District Regulations and Recommended Mitigation are Incorporated into Future** 34 **Conservation Measures and Associated Project Activities**

35 Please see Mitigation Measure AQ-24 under Impact AQ-24 in the discussion of Alternative 1A.

36 **Impact AQ-25: Exposure of Sensitive Receptors to Health Hazards from Localized Particulate** 37 **Matter, Carbon Monoxide, and Diesel Particulate Matter from Implementation of CM2–CM11**

38 **NEPA Effects:** The potential for Alternative 3 to expose sensitive receptors increased health hazards
39 from localized PM, CO, and DPM would be similar to Alternative 1A. Activities shown in Table 22-29
40 with the greatest potential to have short or long-term air quality impacts are also anticipated to
41 have the greatest potential to expose receptors to substantial pollutant concentrations. The effect

1 would vary according to the equipment used, the location and timing of the actions called for in the
 2 conservation measure, the meteorological and air quality conditions at the time of implementation,
 3 and the location of receptors relative to the emission source. Potential health effects would be
 4 evaluated and identified in the subsequent project-level environmental analysis conducted for the
 5 CM2–CM11 restoration and enhancement actions.

6 The effect of increases in PM, CO, or DPM (cancer and non-cancer-risk) in excess of applicable air
 7 district thresholds (Table 22-8) at receptor locations could result in adverse health impacts.
 8 Mitigation Measures AQ-24 and AQ-25 would be available to reduce this effect.

9 **CEQA Conclusion:** Construction and operational emissions associated with the restoration and
 10 enhancement actions under Alternative 3 would result in a significant impact if PM, CO, or DPM
 11 (cancer and non-cancer-risk) concentrations at receptor locations exceed the applicable local air
 12 district thresholds shown in Table 22-8; these effects are expected to be further evaluated and
 13 identified in the subsequent project-level environmental analysis conducted for the CM2–CM11
 14 restoration and enhancement actions. Mitigation Measures AQ-24 and AQ-25 would ensure localized
 15 concentrations at receptor locations would be below applicable air quality management district
 16 thresholds (see Table 22-8). Consequently, this impact would be less than significant.

17 **Mitigation Measure AQ-24: Develop an Air Quality Mitigation Plan (AQMP) to Ensure Air**
 18 **District Regulations and Recommended Mitigation are Incorporated into Future**
 19 **Conservation Measures and Associated Project Activities**

20 Please see Mitigation Measure AQ-24 under Impact AQ-24 in the discussion of Alternative 1A.

21 **Mitigation Measure AQ-25: Prepare a Project-Level Health Risk Assessment to Reduce**
 22 **Potential Health Risks from Exposure to Localized DPM and PM Concentrations**

23 Please see Mitigation Measure AQ-25 under Impact AQ-25 in the discussion of Alternative 1A.

24 **Impact AQ-26: Creation of Potential Odors Affecting a Substantial Number of People from**
 25 **Implementation of CM2–CM11**

26 **NEPA Effects:** The potential for Alternative 3 to expose sensitive receptors increased odors would
 27 be similar to Alternative 1A. Accordingly, construction activities associated with CM2-CM11 are not
 28 anticipated to result in nuisance odors. Similarly, while restored land uses associated with the
 29 program have the potential to generate odors from natural processes, the emissions would be
 30 similar in origin and magnitude to the existing land use types in the restored area (e.g., managed
 31 wetlands). Moreover, specific odor effects would be evaluated and identified in the subsequent
 32 project-level environmental analysis conducted for the CM2–CM11 restoration and enhancement
 33 actions. Accordingly, odor-related effects associated with CM2–CM11 would not be adverse.

34 **CEQA Conclusion:** Alternative 3 would not result in the addition of major odor producing facilities.
 35 Diesel emissions during construction could generate temporary odors, but these would quickly
 36 dissipate and cease once construction is completed. Increases in wetland, tidal, and upland habitats
 37 may increase the potential for odors from natural processes. However, the origin and magnitude of
 38 odors would be similar to the existing land use types in the restored area (e.g., managed wetlands).
 39 Moreover, specific odor impacts would be evaluated and identified in the subsequent project-level
 40 environmental analysis conducted for the CM2–CM11 restoration and enhancement actions.

1 Accordingly, the impact of exposure of sensitive receptors to potential odors would be less than
2 significant. No mitigation is required.

3 **Impact AQ-27: Generation of Cumulative Greenhouse Gas Emissions from Implementation of** 4 **CM2–CM11**

5 **NEPA Effects:** CM2–CM11 implemented under Alternative 3 would result in local GHG emissions
6 from construction equipment and vehicle exhaust, similar to Alternative 1A. Restoration activities
7 with the greatest potential for emissions include those that break ground and require use of
8 earthmoving equipment. The type of restoration action and related construction equipment use are
9 shown in Table 22-29. Implementing CM2–CM11 would also affect long-term sequestration rates
10 through land use changes, such as conversion of agricultural land to wetlands, inundation of peat
11 soils, drainage of peat soils, and removal or planting of carbon-sequestering plants.

12 Without additional information on site-specific characteristics associated with each of the
13 restoration components, a complete assessment of GHG flux from CM2–CM11 is currently not
14 possible. The effect of carbon sequestration and CH₄ generation would vary by land use type, season,
15 and chemical and biological characteristics; these effects would be evaluated and identified in the
16 subsequent project-level environmental analysis conducted for the CM2–CM11 restoration and
17 enhancement actions. Mitigation Measures AQ-24 and AQ-27 would be available to reduce this
18 effect. However, due to the potential for increases in GHG emissions from construction and land use
19 change, this effect would be adverse.

20 **CEQA Conclusion:** The restoration and enhancement actions under Alternative 3 could result in a
21 significant impact if activities are inconsistent with applicable GHG reduction plans, do not
22 contribute to a lower carbon future, or generate excessive emissions, relative to other projects
23 throughout the state. These effects are expected to be further evaluated and identified in the
24 subsequent project-level environmental analysis conducted for the CM2–CM11 restoration and
25 enhancement actions. Mitigation Measures AQ-24 and AQ-27 would be available to reduce this
26 impact, but may not be sufficient to reduce to a less-than-significant level. Consequently, this impact
27 would be significant and unavoidable.

28 **Mitigation Measure AQ-24: Develop an Air Quality Mitigation Plan (AQMP) to Ensure Air** 29 **District Regulations and Recommended Mitigation are Incorporated into Future** 30 **Conservation Measures and Associated Project Activities**

31 Please see Mitigation Measure AQ-24 under Impact AQ-24 in the discussion of Alternative 1A.

32 **Mitigation Measure AQ-27: Prepare a Land Use Sequestration Analysis to Quantify and** 33 **Mitigate (as Needed) GHG Flux Associated with Conservation Measures and Associated** 34 **Project Activities**

35 Please see Mitigation Measure AQ-27 under Impact AQ-27 in the discussion of Alternative 1A.

36 **22.3.3.9 Alternative 4—Dual Conveyance with Modified Pipeline/Tunnel** 37 **and Intakes 2, 3, and 5 (9,000 cfs; Operational Scenario H)**

38 A total of three intakes would be constructed under Alternative 4. For the purposes of this analysis,
39 it was assumed that Intakes 2, 3, and 5 (on the east bank of the Sacramento River) would be
40 constructed under Alternative 4. Under this alternative, an intermediate forebay would also be

1 constructed, and the conveyance facility would be a buried pipeline and tunnels (Figures 3-9 and 3-
2 10 in Chapter 3, *Description of Alternatives*).

3 Construction and operation of Alternative 4 would require the use of electricity, which would be
4 supplied by the California electrical grid. Power plants located throughout the state supply the grid
5 with power, which will be distributed to the Study area to meet project demand. Power supplied by
6 statewide power plants will generate criteria pollutants. Because these power plants are located
7 throughout the state, criteria pollutant emissions associated with Alternative 4 electricity demand
8 cannot be ascribed to a specific air basin or air district within the Study area. Criteria pollutant
9 emissions from electricity consumption, which are summarized in Table 22-98 for Alternative 4
10 Scenarios H1 through H4, are therefore provided for informational purposes only and are not
11 included in the impact conclusion.

12 Construction activities would generate emissions of ozone precursors (ROG and NO_x), CO, PM10,
13 PM2.5, and SO₂. Table 22-99 summarizes criteria pollutant emissions that would be generated in the
14 BAAQMD, SMAQMD, SJVAPCD, and YSAQMD in pounds per day and tons per year. Emissions
15 estimates include implementation of environmental commitments (see Appendix 3B, *Environmental*
16 *Commitments*). Although emissions are presented in different units (pounds and tons), the amounts
17 of emissions are identical (i.e., 2,000 pounds is identical to 1 ton). Summarizing emissions in both
18 pounds per day and tons per year is necessary to evaluate project-level effects against the
19 appropriate air district thresholds, which are given in both pounds and tons (see Table 22-8).

1 **Table 22-98. Criteria Pollutant Emissions from Electricity Consumption: Construction and Net**
 2 **Project Operations, Alternative 4 (tons/year)^{a,b}**

Year	Analysis	ROG	CO	NO _x	PM10	PM2.5 ^c	SO ₂
2016	-	0	0	0	0	0	0
2017	-	0	0	0	0	0	0
2018	-	<1	1	<1	<1	<1	<1
2019	-	<1	3	<1	<1	<1	1
2020	-	<1	19	1	2	2	8
2021	-	<1	50	4	4	4	21
2022	-	1	70	5	6	6	30
2023	-	<1	62	5	5	5	26
2024	-	<1	65	5	5	5	27
2025	-	<1	44	3	4	4	19
2026	-	<1	16	1	1	1	7
2027	-	<1	4	<1	<1	<1	2
2028	-	<1	1	<1	<1	<1	<1
2029	-	<1	<1	<1	<1	<1	<1
Scenario H1							
ELT	CEQA	1	10	133	11	11	56
LLT	NEPA	2	16	217	18	18	92
LLT	CEQA	<1	4	52	4	4	22
Scenario H2							
ELT	CEQA	<0	-1	-9	-1	-1	-4
LLT	NEPA	1	6	85	7	7	36
LLT	CEQA	-1	-6	-80	-7	-7	-34
Scenario H3							
ELT	CEQA	<1	4	55	5	5	23
LLT	NEPA	1	10	143	12	12	61
LLT	CEQA	<0	-2	-22	-2	-2	-9
Scenario H4							
ELT	CEQA	-1	-6	-80	-7	-7	-34
LLT	NEPA	<1	1	16	1	1	7
LLT	CEQA	-1	-11	-150	-13	-13	-63

NEPA = Compares criteria pollutant emissions after implementation of Alternative 4 to the No Action Alternative.

CEQA = Compares criteria pollutant emissions after implementation of Alternative 4 to Existing Conditions.

^a Emissions assume implementation of RPS (see Appendix 22A, *Air Quality Analysis Methodology*). Power plants that generate electricity for the proposed project would be subject to local air district permitting requirements, including standards to implement BACT to reduce criteria pollutant emissions.

^b Because GHG emissions are cumulative (see Section 22.3.2.1) and not evaluated at the local air basin or air district level, they are discussed in Impacts AQ-21 and AQ-22. The GHG analysis for SWP power utilizes actual and forecasted GHG emissions rates for the SWP system, which differs slightly from the above analysis. Statewide grid average emission factors were utilized for the above analysis as criteria pollutant emission factors for SWP were unavailable. Please also note that the above analysis does not account for additional renewable energy that will be procured through modifications to DWR's REPP (see Impact AQ-22). Accordingly, the emissions results presented above represent a conservative assessment of potential criteria pollutant emissions.

^c Emission factors for PM2.5 are currently unavailable. Consequently, PM2.5 emissions were assumed to equal PM10 emissions. Because PM2.5 represents a fraction of PM10, this approach represents a conservative assessment of PM2.5 emissions from electricity consumption.

3

1 As shown in Appendix 22B, *Air Quality Assumptions*, construction activities during several phases
2 will likely occur concurrently. To ensure a conservative analysis, the maximum daily emissions
3 during these periods of overlap were estimated assuming all equipment would operate at the same
4 time—this gives the maximum total project-related air quality impact during construction.
5 Accordingly, the daily emissions estimates represent a conservative assessment of construction
6 impacts. Exceedances of the air district thresholds are shown in underlined text.
7

1 **Table 22-99. Criteria Pollutant Emissions from Construction of Alternative 4 (pounds/day and tons/year)**

Year	Maximum Daily Emissions (pounds/day)										Annual Emissions (tons/year)									
	Bay Area Air Quality Management District										Bay Area Air Quality Management District									
	ROG	NO _x	CO	PM10			PM2.5			SO ₂	ROG	NO _x	CO	PM10			PM2.5			SO ₂
			Exhaust	Dust	Total	Exhaust	Dust	Total				Exhaust	Dust	Total	Exhaust	Dust	Total			
2016	1	15	16	<1	3	3	<1	<1	1	<1	<1	1	2	<1	<1	<1	<1	<1	<1	
2017	3	49	25	<1	27	28	<1	7	7	1	<1	1	2	<1	<1	<1	<1	<1	<1	
2018	50	<u>498</u>	381	7	257	234	7	52	53	8	3	20	20	0	11	12	<1	2	2	<1
2019	41	<u>487</u>	268	4	309	283	4	63	61	4	2	19	16	0	16	16	<1	2	2	<1
2020	<u>56</u>	<u>619</u>	420	9	438	326	9	84	74	54	5	46	40	1	25	26	1	4	5	7
2021	<u>82</u>	<u>898</u>	605	17	474	369	16	92	90	127	8	72	58	2	34	35	2	6	7	12
2022	<u>84</u>	<u>907</u>	609	17	483	379	16	95	92	127	10	98	74	2	40	43	2	7	9	19
2023	<u>86</u>	<u>934</u>	631	17	500	395	16	103	100	128	10	99	75	2	39	42	2	7	9	19
2024	<u>196</u>	<u>1,680</u>	1,243	25	682	586	24	131	137	140	15	129	104	3	50	52	3	8	11	20
2025	<u>203</u>	<u>1,700</u>	1,260	26	676	580	25	129	136	147	19	148	125	2	51	53	2	8	11	13
2026	<u>144</u>	<u>1,154</u>	855	10	600	489	10	113	104	10	10	67	61	1	34	34	1	5	6	1
2027	<u>108</u>	<u>871</u>	673	16	501	487	16	98	109	10	9	58	54	1	31	32	1	5	6	1
2028	<u>110</u>	<u>842</u>	675	9	419	399	8	79	83	9	6	40	39	1	26	26	<1	4	4	1
2029	16	<u>177</u>	108	1	225	197	1	42	39	2	<1	1	1	<1	5	5	<1	1	1	<1
<i>Thresholds</i>	<i>54</i>	<i>54</i>	-	<i>82</i>	<i>BMPs</i>	-	<i>54</i>	<i>BMPs</i>	-	-	-	-	-	-	-	-	-	-	-	-
Year	Sacramento Metropolitan Air Quality Management District										Sacramento Metropolitan Air Quality Management District									
	ROG	NO _x	CO	PM10			PM2.5			SO ₂	ROG	NO _x	CO	PM10			PM2.5			SO ₂
				Exhaust	Dust	Total	Exhaust	Dust	Total				Exhaust	Dust	Total	Exhaust	Dust	Total		
2016	3	31	33	1	6	6	1	1	1	1	<1	3	4	<1	<1	<1	<1	<1	<1	<1
2017	7	73	62	9	19	29	9	3	13	1	<1	4	5	<1	<1	1	<1	<1	1	<1
2018	18	<u>209</u>	132	18	149	163	18	25	38	2	1	6	9	2	7	9	2	1	3	<1
2019	75	<u>730</u>	508	20	258	278	20	41	61	3	5	41	35	2	19	21	2	3	4	<1
2020	81	<u>839</u>	648	10	399	409	10	57	67	3	6	62	46	1	29	30	1	4	4	<1
2021	107	<u>1,036</u>	876	12	429	440	12	66	75	6	10	81	85	1	39	40	1	5	6	<1
2022	120	<u>1,183</u>	969	12	458	469	12	70	81	10	11	81	88	1	39	40	1	6	7	1
2023	113	<u>934</u>	887	10	422	429	10	67	74	7	10	72	80	1	37	38	1	6	6	<1
2024	153	<u>1,247</u>	991	15	445	460	14	76	91	12	11	80	80	1	35	36	1	5	7	1
2025	164	<u>1,273</u>	1,059	16	449	465	15	77	92	12	13	96	91	1	39	41	1	6	7	1
2026	147	<u>1,236</u>	981	15	446	461	14	72	86	12	12	87	86	1	33	34	1	5	6	1
2027	151	<u>1,254</u>	929	15	437	452	14	70	84	9	11	79	67	1	32	33	1	4	5	<1
2028	60	<u>434</u>	354	4	238	240	4	40	42	2	3	19	24	<1	19	19	<1	3	3	<1
2029	60	<u>416</u>	356	4	196	200	4	31	35	8	3	19	18	<1	13	13	<1	2	2	<1
<i>Thresholds</i>	-	<i>85</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Year	San Joaquin Valley Air Pollution Control District										San Joaquin Valley Air Pollution Control District									
	ROG	NO _x	CO	PM10			PM2.5			SO ₂	ROG	NO _x	CO	PM10			PM2.5			SO ₂
				Exhaust	Dust	Total	Exhaust	Dust	Total					Exhaust	Dust	Total	Exhaust	Dust	Total	
2016	4	44	48	1	8	9	1	1	2	1	<1	4	5	<1	<1	<1	<1	<1	<1	<1
2017	7	58	67	8	13	21	8	2	10	1	1	5	6	<1	<1	1	<1	<1	1	<1
2018	44	342	358	20	113	128	20	14	32	6	3	<u>20</u>	22	2	8	9	2	1	3	<1
2019	87	601	603	16	304	312	16	38	49	3	6	<u>42</u>	38	2	26	<u>27</u>	2	3	5	<1
2020	146	1,125	1,027	18	585	603	17	70	87	16	<u>12</u>	<u>95</u>	95	1	46	<u>48</u>	1	6	7	2
2021	156	1,143	1,158	17	583	599	17	71	87	37	<u>14</u>	<u>104</u>	120	2	46	<u>47</u>	2	6	7	3
2022	142	1,077	1,258	17	493	509	16	62	78	37	<u>16</u>	<u>112</u>	145	2	45	<u>47</u>	2	6	8	6
2023	117	803	1,080	13	349	361	12	45	57	36	<u>14</u>	<u>92</u>	130	2	33	<u>35</u>	1	5	6	6
2024	100	635	956	9	251	260	9	34	43	36	<u>12</u>	<u>74</u>	117	1	23	<u>24</u>	1	3	5	6
2025	96	604	906	9	202	212	9	28	37	36	<u>10</u>	<u>62</u>	99	1	18	<u>19</u>	1	3	4	4
2026	55	360	521	4	193	197	4	25	29	1	6	<u>39</u>	55	<1	14	15	<1	2	2	<1
2027	52	338	477	5	171	176	5	21	26	1	4	<u>27</u>	33	<1	14	14	<1	2	2	<1
2028	38	254	263	3	90	92	3	12	14	1	2	<u>10</u>	12	<1	7	7	<1	1	1	<1
2029	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<i>Thresholds</i>	-	-	-	-	-	-	-	-	-	-	<i>10</i>	<i>10</i>	-	-	-	<i>15</i>	-	-	<i>15</i>	-
Year	Yolo Solano Air Quality Management District										Yolo Solano Air Quality Management District									
	ROG	NO _x	CO	PM10			PM2.5			SO ₂	ROG	NO _x	CO	PM10			PM2.5			SO ₂
				Exhaust	Dust	Total	Exhaust	Dust	Total					Exhaust	Dust	Total	Exhaust	Dust	Total	
2016	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2017	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2018	3	78	16	<1	21	22	<1	6	6	<1	<1	2	<1	<1	1	1	<1	<1	<1	<1
2019	4	105	22	<1	29	29	<1	7	8	1	<1	4	1	<1	1	1	<1	<1	<1	<1
2020	6	158	34	<1	43	43	<1	11	12	1	<1	2	<1	<1	1	1	<1	<1	<1	<1
2021	6	155	34	<1	43	43	<1	11	12	1	<1	6	1	<1	2	2	<1	<1	<1	<1
2022	7	174	39	1	50	51	1	13	13	1	<1	1	<1	<1	<1	<1	<1	<1	<1	<1
2023	6	139	37	<1	50	51	<1	13	13	1	<1	1	<1	<1	<1	<1	<1	<1	<1	<1
2024	6	136	37	<1	50	51	<1	13	13	1	<1	3	1	<1	1	1	<1	<1	<1	<1
2025	5	114	32	<1	43	43	<1	11	11	1	<1	10	3	<1	4	4	<1	1	1	<1
2026	5	111	32	<1	43	43	<1	11	11	1	<1	3	1	<1	1	1	<1	<1	<1	<1
2027	5	108	31	<1	43	43	<1	11	11	1	<1	1	<1	<1	<1	<1	<1	<1	<1	<1
2028	3	53	16	<1	21	22	<1	6	6	<1	<1	1	<1	<1	<1	<1	<1	<1	<1	<1
2029	3	51	16	<1	21	22	<1	6	6	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
<i>Thresholds</i>	-	-	-	-	-	<i>80</i>	-	-	-	-	<i>10</i>	<i>10</i>	-	-	-	-	-	-	-	-

1 Operation and maintenance activities under Alternative 4 would result in emissions of ROG, NO_x, CO,
2 PM10, PM2.5, and SO₂. Emissions were quantified for both ELT and LLT conditions, although
3 activities would take place annually until project decommissioning. Future emissions, in general, are
4 anticipated to lessen because of continuing improvements in vehicle and equipment engine
5 technology.

6 Table 22-100 summarizes criteria pollutant emissions associated with operation of Alternative 4 in
7 the BAAQMD, SMAQMD, and SJVAPCD in pounds per day and tons per year (no operational
8 emissions would be generated in the YSAMQD). The emissions summarized in Table 22-100 are
9 representative of Scenarios H1 through H4. Although emissions are presented in different units
10 (pounds and tons), the amounts of emissions are identical (i.e., 2,000 pounds is identical to 1 ton).
11 Summarizing emissions in both pounds per day and tons per year is necessary to evaluate project-
12 level effects against the appropriate air district thresholds, which are given in both pounds and tons
13 (see Table 22-8).

14 **Table 22-100. Criteria Pollutant Emissions from Operation of Alternative 4 (Scenarios H1 through**
15 **H4) (pounds per day and tons per year)**

Condition	Maximum Daily Emissions (pounds/day)						Annual Emissions (tons/year)					
	Bay Area Air Quality Management District						Bay Area Air Quality Management District					
	ROG	NO _x	CO	PM10	PM2.5	SO ₂	ROG	NO _x	CO	PM10	PM2.5	SO ₂
ELT	4	27	50	9	3	<1	0.19	1.15	2.42	0.38	0.11	0.01
LLT	4	23	48	8	2	<1	0.16	0.97	2.33	0.37	0.10	0.01
<i>Thresholds</i>	<i>54</i>	<i>54</i>	<i>-</i>	<i>82</i>	<i>82</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>
	Sacramento Metropolitan Air Quality Management District						Sacramento Metropolitan Air Quality Management District					
	ROG	NO _x	CO	PM10	PM2.5	SO ₂	ROG	NO _x	CO	PM10	PM2.5	SO ₂
ELT	4	24	43	7	2	<1	0.13	0.80	1.65	0.27	0.08	<0.01
LLT	3	20	41	7	2	<1	0.11	0.68	1.58	0.26	0.07	<0.01
<i>Thresholds</i>	<i>65</i>	<i>65</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>
	San Joaquin Valley Air Pollution Control District						San Joaquin Valley Air Pollution Control District					
	ROG	NO _x	CO	PM10	PM2.5	SO ₂	ROG	NO _x	CO	PM10	PM2.5	SO ₂
ELT	3	19	36	6	2	<1	0.01	0.08	0.14	0.02	0.01	<0.01
LLT	3	16	33	6	1	<1	0.01	0.07	0.13	0.02	0.01	<0.01
<i>Thresholds</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>10</i>	<i>10</i>	<i>-</i>	<i>15</i>	<i>15</i>	<i>-</i>

16
17 **Impact AQ-1: Generation of Criteria Pollutants in Excess of the SMAQMD Regional Thresholds**
18 **during Construction of the Proposed Water Conveyance Facility**

19 **NEPA Effects:** As shown in Table 22-99, construction emissions associated with Alternative 4 would
20 exceed SMAQMD's daily NO_x threshold for all years between 2018 and 2029, even with
21 implementation of environmental commitments (see Appendix 3B, *Environmental Commitments*).
22 Since NO_x is a precursor to ozone and PM, exceedances of SMAQMD's daily NO_x threshold could
23 impact both regional ozone and PM formation, which could worsen regional air quality and air basin
24 attainment of the NAAQS and CAAQS.

1 While equipment could operate at any work area identified for this alternative, the highest level of
 2 NO_x emissions in the SMAQMD is expected to occur at those sites where the duration and intensity
 3 of construction activities would be greatest. This includes all intake and intake pumping plant sites
 4 along the east bank of the Sacramento River, as well as the intermediate forebay (and control
 5 structure) site west of South Stone Lake and east of the Sacramento River.

6 DWR has identified several environmental commitments to reduce construction-related criteria
 7 pollutants in the SMAQMD. These commitments include performance standards for newer and
 8 cleaner off-road equipment, marine vessels, and haul trucks. All tunneling locomotives would be
 9 required to utilize Tier 4 engines, and air district recommended BMPs for proper engine
 10 maintenance and idling restrictions would also be implemented. These environmental commitments
 11 will reduce construction-related emissions; however, as shown in Table 22-99, NO_x emissions would
 12 still exceed SMAQMD regional threshold identified in Table 22-8 and would result in an adverse
 13 effect to air quality. Mitigation Measures AQ-1a and AQ-1b would be available to reduce NO_x
 14 emissions, and would thus address regional effects related to secondary ozone and PM formation.

15 **CEQA Conclusion:** NO_x emissions generated during construction would exceed SMAQMD regional
 16 threshold identified in Table 22-8. Since NO_x is a precursor to ozone and PM, exceedances of
 17 SMAQMD's daily NO_x threshold could impact both regional ozone and PM formation. SMAQMD's
 18 regional emissions thresholds (Table 22-8) have been adopted to ensure projects do not hinder
 19 attainment of the CAAQS or NAAQS. The impact of generating NO_x emissions in excess of local air
 20 district thresholds would therefore violate applicable air quality standards in the study area and
 21 could contribute to or worsen an existing air quality conditions. This would be a significant impact.
 22 Mitigation Measures AQ-1a and AQ-1b would be available to reduce NO_x emissions to a less-than-
 23 significant level by offsetting emissions to quantities below SMAQMD CEQA thresholds (see Table
 24 22-8).

25 **Mitigation Measure AQ-1a: Mitigate and Offset Construction-Generated Criteria Pollutant**
 26 **Emissions within the SFNA to Net Zero (0) for Emissions in Excess of General Conformity**
 27 ***De Minimis* Thresholds (Where Applicable) and to Quantities below Applicable CEQA**
 28 **Thresholds for Other Pollutants⁴⁰**

29 DWR will reduce criteria pollutant emissions generated by the construction of the water
 30 conveyance facilities associated with BDCP within the SFNA through the creation of offsetting
 31 reductions of emissions. The preferred means of undertaking such offsite mitigation shall be
 32 through a partnership with the SMAQMD involving the payment of offsite mitigation fees.
 33 Criteria pollutants in excess of the federal *de minimis* thresholds shall be reduced to net zero (0)
 34 (see Table 22-8). Criteria pollutants not in excess of the *de minimis* thresholds, but above any

⁴⁰ In the title of this mitigation measure, the phrase "for other pollutants" is intended to apply to other alternatives, where associated impacts to other pollutants may exceed thresholds other than NO_x.

1 applicable air pollution control or air quality management district CEQA thresholds⁴¹ shall be
2 reduced to quantities below the numeric thresholds (see Table 22-8).⁴²

3 DWR will undertake in good faith an effort to enter into a development mitigation contract with
4 SMAQMD in order to reduce criteria pollutant emissions generated by the construction of the
5 water conveyance facilities associated with BDCP. The preferred source of emissions reductions
6 for NO_x, PM, and ROG shall be through contributions to SMAQMD's HDLEVIP. The HDLEVIP is
7 designed to reduce NO_x, PM, and ROG from on- and offroad sources. The program is managed
8 and implemented by SMAQMD on behalf of all air districts within the SFNA, including the
9 YSAQMD.

10 SMAQMD's incentive programs are a means of funding projects and programs capable of
11 achieving emissions reductions. The payment fee is based on the average cost to achieve one tpd
12 of reductions based on the average cost for reductions over the previous year. Onroad
13 reductions averaged (nominally) \$44 million (NO_x only) and off-road reductions averaged \$36
14 million (NO_x only) over the previous year, thus working out to approximately \$40 million per
15 one tpd of reductions. This rate roughly correlates to the average cost effectiveness of the Carl
16 Moyer Incentive Program.

17 If DWR is successful in reaching what it regards as a satisfactory agreement with SMAQMD,
18 DWR will enter into mitigation contracts with SMAQMD to reduce NO_x, PM, or ROG (as
19 appropriate) emissions to the required levels. Such reductions may occur within the SMAQMD
20 and/or within another air district within the SFNA. The required levels are:

- 21 • For emissions in excess of the federal *de minimis* threshold: **net zero (0)** (see Table 22-9).
- 22 • For emissions not in excess of *de minimis* thresholds but above the appropriate SMAQMD
23 standards: **below the appropriate CEQA threshold levels.** (see Table 22-8)

24 Implementation of this mitigation would require DWR to adopt the following specific
25 responsibilities.

- 26 • Consult with the SMAQMD in good faith with the intention of entering into a mitigation
27 contract with SMAQMD for the HDLEVIP. For SIP purposes, the necessary reductions must
28 be achieved (contracted and delivered) by the applicable year in question (i.e., emissions
29 generated in year 2016 would need to be reduced offsite in 2016). Funding would need to
30 be received prior to contracting with participants and should allow sufficient time to receive
31 and process applications to ensure offsite reduction projects are funded and implemented
32 prior to commencement of BDCP activities being reduced. This would roughly equate to the
33 equivalent of two years prior to the required mitigation; additional lead time may be
34 necessary depending on the level of offsite emission reductions required for a specific year.

⁴¹ For example, NO_x emissions in a certain year may exceed SMAQMD's 85 pound per day CEQA threshold, but not the 25 ton annual *de minimis* threshold. According to Appendix G of the State CEQA Guidelines, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make determinations regarding the significance of an impact.

⁴² For example, emissions of NO_x generated by Alternative 4 both exceed the federal *de minimis* threshold for the SVAB and the SMAQMD's CEQA threshold. NO_x emissions must therefore be reduced to net zero (0).

1 In negotiating the terms of the mitigation contract, DWR and SMAQMD should seek
2 clarification and agreement on SMAQMD responsibilities, including the following.

- 3 ○ Identification of appropriate offsite mitigation fees required for BDCP.
- 4 ○ Timing required for obtaining necessary offsite emission credits.
- 5 ○ Processing of mitigation fees paid by DWR.
- 6 ○ Verification of emissions inventories submitted by DWR.
- 7 ○ Verification that offsite fees are applied to appropriate mitigation programs within the
8 SFNA.
- 9 ● Quantify mitigation fees required to satisfy the appropriate reductions. As noted above, the
10 payment fees may vary by year and are sensitive to the number of projects requiring
11 reductions within the SFNA. The schedule in which payments are provided to SMAQMD also
12 influences overall cost. For example, a higher rate on a per-tonnage basis will be required
13 for project elements that need accelerated equipment turn-over to achieve near-term
14 reductions, whereas project elements that are established to contract to achieve far-term
15 reductions will likely pay a lower rate on a per-tonnage basis.
- 16 ● Develop a compliance program to calculate emissions and collect fees from the construction
17 contractors for payment to SMAQMD. The program will require, as a standard or
18 specification of their construction contracts with DWR, that construction contractors
19 identify construction emissions and their share of required offsite fees, if applicable. Based
20 on the emissions estimates, DWR will collect fees from the individual construction
21 contractors (as applicable) for payment to SMAQMD. Construction contractors will have the
22 discretion to reduce their construction emissions to the lowest possible level through
23 additional onsite mitigation, as the greater the emissions reductions that can be achieved by
24 onsite mitigation, the lower the required offsite fee. Acceptable options for reducing
25 emissions may include use of late-model engines, low-emission diesel products, additional
26 electrification or alternative fuels, engine-retrofit technology, and/or after-treatment
27 products. All control strategies must be verified by SMAQMD.
- 28 ● Conduct daily and annual emissions monitoring to ensure onsite emissions reductions are
29 achieved and no additional mitigation payments are required. Excess offsite funds can be
30 carried from previous to subsequent years in the event that additional reductions are
31 achieved by onsite mitigation. At the end of the project, if it is determined that excess offset
32 funds remain (outstanding contracts and administration over the final years of the contracts
33 will be taken into consideration), SMAQMD and DWR shall determine the disposition of final
34 funds (e.g., additional emission reduction projects to offset underperforming contracts,
35 return of funds to DWR, etc.).

36 If a sufficient number of emissions reduction projects are not identified to meet the required
37 performance standard, DWR will coordinate with SMAQMD to ensure the performance
38 standards of achieving net zero (0) for emissions in excess of General Conformity *de minimis*
39 thresholds (where applicable) and of achieving quantities below applicable CEQA thresholds for
40 other pollutants not in excess of the *de minimis* thresholds but above CEQA thresholds are met.

41 **Mitigation Measure AQ-1b: Develop an Alternative or Complementary Offsite Mitigation**
42 **Program to Mitigate and Offset Construction-Generated Criteria Pollutant Emissions**

within the SFNA to Net Zero (0) for Emissions in Excess of General Conformity *De Minimis* Thresholds (Where Applicable) and to Quantities below Applicable CEQA Thresholds for Other Pollutants

Should DWR be unable to enter into what they regard as a satisfactory agreement with SMAQMD as contemplated by Mitigation Measure AQ-1a, or should DWR enter into an agreement with SMAQMD but find themselves unable to meet the performance standards set forth in Mitigation Measure AQ-1a, DWR will develop an alternative or complementary offsite mitigation program to reduce criteria pollutant emissions generated by the construction of the water conveyance facilities associated with BDCP. The offsite mitigation program will offset criteria pollutant emissions to the required levels identified in Mitigation Measure AQ-1a. Accordingly, the program will ensure that the project does not contribute to or worsen existing air quality exceedances. Whether this program will address emissions beyond NO_x, PM, or ROG, will turn on whether DWR has achieved sufficient reductions of those pollutants pursuant to Mitigation Measure AQ-1a.

The offsite mitigation program will establish a program to fund emission reduction projects through grants and similar mechanisms. All projects must provide contemporaneous (occur in the same calendar year as the emission increases) and localized (i.e., within the SFNA) emissions benefit to the area of effect. DWR may identify emissions reduction projects through consultation with SMAQMD, other air districts within the SFNA, and ARB, as needed. Potential projects could include, but are not limited to the following.

- Alternative fuel, low-emission school buses, transit buses, and other vehicles.
- Diesel engine retrofits and repowers.
- Locomotive retrofits and repowers.
- Electric vehicle or lawn equipment rebates.
- Electric vehicle charging stations and plug-ins.
- Video-teleconferencing systems for local businesses.
- Telecommuting start-up costs for local businesses.

As part of its alternative or complementary offsite mitigation program, DWR will develop pollutant-specific formulas to monetize, calculate, and achieve emissions reductions in a cost-effective manner. Construction contractors, as a standard specification of their construction contracts with DWR, will identify construction emissions and their share of required offset fees. DWR will verify the emissions estimates submitted by the construction contractors and calculate the required fees. Construction contractors (as applicable) will be required to surrender required fees to DWR prior to the start of construction. Construction contractors will have the discretion to reduce their construction emissions to the lowest possible level through additional onsite mitigation, as the greater the emissions reductions that can be achieved by onsite mitigation, the lower the required offset fee. Acceptable options for reducing emissions may include, but are not limited to, the use of late-model engines, low-emission diesel products, additional electrification or alternative fuels, engine-retrofit technology, and/or after-treatment products. All control strategies must be verified by SMAQMD, the ARB, any relevant air pollution control or air quality management district within the SFNA, or by a qualified air quality expert employed by or retained by DWR.

1 The offsite fee, grant, or other mechanism will be calculated or formulated based on the actual
 2 cost of pollutant reductions. No collected offset fees will be used to cover administrative costs;
 3 offset fees or other payments are strictly limited to procurement of offsite emission reductions.
 4 Fees or other payments collected by DWR will be allocated to emissions reductions projects in a
 5 grant-like manner. DWR shall document the fee schedule basis, such as consistency with the
 6 ARB's Carl Moyer Program cost-effectiveness limits and capital recovery factors.

7 DWR will conduct annual reporting to verify and document that emissions reductions projects
 8 achieve a 1:1 reduction with construction emissions to ensure claimed offsets meet the required
 9 performance standard. All offsite reductions must be quantifiable, verifiable, enforceable, and
 10 satisfy the basic criterion of additionally (i.e., the reductions would not happen without the
 11 financial support of purchased offset credits). Annual reports will include, at a minimum the
 12 following components.

- 13 • Total amount of offset fees received.
- 14 • Total fees distributed to offsite projects.
- 15 • Total fees remaining.
- 16 • Projects funded and associated pollutant reductions realized.
- 17 • Total emission reductions realized.
- 18 • Total emissions reductions remaining to satisfy the requirements of Mitigation Measure AQ-
 19 1b.
- 20 • Overall cost-effectiveness of the projects funded.

21 If a sufficient number of emissions reduction projects are not identified to meet the required
 22 performance standard, DWR will consult with SMAQMD, the ARB, any relevant air pollution
 23 control or air quality management district within the SFNA, or a qualified air quality expert
 24 employed by or retained by DWR to ensure conformity is met through some other means of
 25 achieving the performance standards of achieving net zero (0) for emissions in excess of General
 26 Conformity *de minimis* thresholds (where applicable) and of achieving quantities below
 27 applicable CEQA thresholds for other pollutants.

28 **Impact AQ-2: Generation of Criteria Pollutants in Excess of the YSAQMD Regional Thresholds** 29 **during Construction of the Proposed Water Conveyance Facility**

30 **NEPA Effects:** As shown in Table 22-98, construction emissions would not exceed YSAQMD regional
 31 thresholds (NO_x emissions in 2025 are 9.7 tons). Accordingly, the alternative would not contribute
 32 to or worsen existing air quality conditions. There would be no adverse effect.

33 **CEQA Conclusion:** Construction emission would not exceed YSAQMD's regional thresholds identified
 34 in Table 22-8. Accordingly, the alternative would not contribute to or worsen existing air quality
 35 conditions. This impact would be less than significant. No mitigation is required.

36 **Impact AQ-3: Generation of Criteria Pollutants in Excess of the BAAQMD Regional Thresholds** 37 **during Construction of the Proposed Water Conveyance Facility**

38 **NEPA Effects:** As shown in Table 22-98, construction emissions associated with Alternative 4 would
 39 exceed BAAQMD's daily thresholds for the following pollutants and years, even with implementation

1 of environmental commitments. All other pollutants would be below air district thresholds and
 2 therefore would not result in an adverse air quality effect.

- 3 • ROG: 2020–2028
- 4 • NO_x: 2018–2029

5 Since ROG and NO_x are precursors to ozone and NO_x is a precursor to PM, exceedances of BAAQMD's
 6 ROG and NO_x thresholds could impact both regional ozone and PM formation, which could worsen
 7 regional air quality and air basin attainment of the NAAQS and CAAQS.

8 While equipment could operate at any work area identified for this alternative, the highest level of
 9 ROG and NO_x emissions in the BAAQMD are expected to occur at those sites where the duration and
 10 intensity of construction activities would be greatest, including the site of the Byron Tract Forebay
 11 adjacent to and south of Clifton Court Forebay.

12 Environmental commitments outlined in Appendix 3B, *Environmental Commitments*, will reduce
 13 construction-related emissions; however, as shown in Table 22-98, ROG and NO_x emissions would
 14 still exceed the applicable air district thresholds identified in Table 22-8 and would result in an
 15 adverse effect to air quality. Mitigation Measures AQ-3a and AQ-3b are available to reduce ROG and
 16 NO_x emissions, and would thus address regional effects related to secondary ozone and PM
 17 formation.

18 **CEQA Conclusion:** Emissions of ROG and NO_x generated during construction would exceed BAAQMD
 19 regional thresholds identified in Table 22-8. Since ROG and NO_x are precursors to ozone and NO_x is a
 20 precursor to PM, exceedances of BAAQMD's ROG and NO_x thresholds could impact both regional
 21 ozone and PM formation. BAAQMD's regional emissions thresholds (Table 22-8) have been adopted
 22 to ensure projects do not hinder attainment of the CAAQS or NAAQS. The impact of generating ROG
 23 and NO_x emissions in excess of BAAQMD's regional thresholds would therefore violate applicable air
 24 quality standards in the Study area and could contribute to or worsen an existing air quality
 25 conditions. This would be a significant impact. Mitigation Measures AQ-3a and AQ-3b would be
 26 available to reduce ROG and NO_x emissions to a less-than-significant level by offsetting emissions to
 27 quantities below BAAQMD CEQA thresholds (see Table 22-8).

28 **Mitigation Measure AQ-3a: Mitigate and Offset Construction-Generated Criteria Pollutant**
 29 **Emissions within BAAQMD/SFBAAB to Net Zero (0) for Emissions in Excess of General**
 30 **Conformity *De Minimis* Thresholds (Where Applicable) and to Quantities below**
 31 **Applicable BAAQMD CEQA Thresholds for Other Pollutants⁴³**

32 DWR will reduce criteria pollutant emissions generated by the construction of the water
 33 conveyance facilities associated with BDCP within the BAAQMD through the creation of
 34 offsetting reductions of emissions occurring within the SFBAAB. The preferred means of
 35 undertaking such offsite mitigation shall be through a partnership with the BAAQMD involving
 36 the payment of offsite mitigation fees. Criteria pollutants in excess of the federal *de minimis*
 37 thresholds shall be reduced to net zero (0) (see Table 22-9). Criteria pollutants not in excess of
 38 the *de minimis* thresholds, but above any applicable air pollution control or air quality

⁴³ In the title of this mitigation measure, the phrase "for other pollutants" is intended to apply to other alternatives, where associated impacts to other pollutants may exceed thresholds other than NO_x.

1 management district CEQA thresholds⁴⁴ shall be reduced to quantities below the numeric
2 thresholds (see Table 22-8).

3 DWR will undertake in good faith an effort to enter into a development mitigation contract with
4 BAAQMD in order to reduce criteria pollutant emissions generated by the construction of the
5 water conveyance facilities associated with BDCP within the BAAQMD. The preferred source of
6 emissions reductions for NO_x, ROG, and PM shall be through contributions to BAAQMD's Carl
7 Moyer Program and/or other BAAQMD incentive programs (e.g., TFCA).

8 If DWR is successful in reaching what it regards as a satisfactory agreement with BAAQMD, DWR
9 will enter into mitigation contracts with BAAQMD to reduce NO_x, PM, or ROG (as appropriate)
10 emissions to the required levels. Such reductions may occur within the SFBAAB. The required
11 levels are:

- 12 • For emissions in excess of the federal *de minimis* threshold: **net zero (0)** (see Table 22-9).
- 13 • For emissions not in excess of *de minimis* thresholds but above the appropriate BAAQMD
14 standards: **below the appropriate CEQA threshold levels.** (see Table 22-8)

15 Implementation of this mitigation would require DWR adopt the following specific
16 responsibilities.

- 17 • Consult with the BAAQMD in good faith with the intention of entering into a mitigation
18 contract with BAAQMD for the Carl Moyer Program and/or other BAAQMD emission
19 reduction incentive program. For SIP purposes, the necessary reductions must be achieved
20 (contracted and delivered) by the applicable year in question (i.e., emissions generated in
21 year 2016 would need to be reduced offsite in 2016). Funding would need to be received
22 prior to contracting with participants and should allow sufficient time to receive and
23 process applications to ensure offsite reduction projects are funded and implemented prior
24 to commencement of BDCP activities being reduced. In negotiating the terms of the
25 mitigation contract, DWR and BAAQMD should seek clarification and agreement on
26 BAAQMD responsibilities, including the following.
 - 27 ○ Identification of appropriate offsite mitigation fees required for BDCP.
 - 28 ○ Timing required for obtaining necessary offsite emission credits.
 - 29 ○ Processing of mitigation fees paid by DWR.
 - 30 ○ Verification of emissions inventories submitted by DWR.
 - 31 ○ Verification that offsite fees are applied to appropriate mitigation programs within the
32 SFBAAB.
- 33 • Quantify mitigation fees required to satisfy the appropriate reductions. Funding for the
34 emission reduction projects will be provided in an amount up to the emission reduction
35 project cost-effectiveness limit set by for the Carl Moyer Program during the year that the

⁴⁴ For example, NO_x emissions in a certain year may exceed BAAQMD's 54 pound per day CEQA threshold, but not the 100 ton annual *de minimis* threshold. According to Appendix G of the State CEQA Guidelines, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make determinations regarding the significance of an impact.

1 emissions from construction are emitted. (The current emissions limit is \$17,720 / weighted
 2 ton of criteria pollutants [NO_x + ROG + (20*PM)]). An administrative fee of 5% would be
 3 paid by DWR to the BAAQMD to implement the program. The funding would be used to fund
 4 projects eligible for funding under the Carl Moyer Program guidelines or other BAAQMD
 5 emission reduction incentive program meeting the same cost-effectiveness threshold that
 6 are real, surplus, quantifiable, and enforceable.

- 7 • Develop a compliance program to calculate emissions and collect fees from the construction
 8 contractors for payment to BAAQMD. The program will require, as a standard or
 9 specification of their construction contracts with DWR, that construction contractors
 10 identify construction emissions and their share of required offsite fees, if applicable. Based
 11 on the emissions estimates, DWR will collect fees from the individual construction
 12 contractors (as applicable) for payment to BAAQMD. Construction contractors will have the
 13 discretion to reduce their construction emissions to the lowest possible level through
 14 additional onsite mitigation, as the greater the emissions reductions that can be achieved by
 15 onsite mitigation, the lower the required offsite fee. Acceptable options for reducing
 16 emissions may include use of late-model engines, low-emission diesel products, additional
 17 electrification or alternative fuels, engine-retrofit technology, and/or after-treatment
 18 products. All control strategies must be verified by BAAQMD.
- 19 • Conduct daily and annual emissions monitoring to ensure onsite emissions reductions are
 20 achieved and no additional mitigation payments are required. Excess offsite funds can be
 21 carried from previous to subsequent years in the event that additional reductions are
 22 achieved by onsite mitigation. At the end of the project, if it is determined that excess offset
 23 funds remain (outstanding contracts and administration over the final years of the contracts
 24 will be taken into consideration), BAAQMD and DWR shall determine the disposition of final
 25 funds (e.g., additional emission reduction projects to offset underperforming contracts,
 26 return of funds to DWR, etc.).

27 If a sufficient number of emissions reduction projects are not identified to meet the required
 28 performance standard, the DWR will coordinate with BAAQMD to ensure the performance
 29 standards of achieving net zero (0) for emissions in excess of General Conformity *de minimis*
 30 thresholds (where applicable) and of achieving quantities below applicable BAAQMD CEQA
 31 thresholds for other pollutants not in excess of the *de minimis* thresholds but above BAAQMD
 32 CEQA thresholds are met.

33 **Mitigation Measure AQ-3b: Develop an Alternative or Complementary Offsite Mitigation**
 34 **Program to Mitigate and Offset Construction-Generated Criteria Pollutant Emissions**
 35 **within the BAAQMD/SFBAAB to Net Zero (0) for Emissions in Excess of General**
 36 **Conformity *De Minimis* Thresholds (Where Applicable) and to Quantities below**
 37 **Applicable BAAQMD CEQA Thresholds for Other Pollutants**

38 Should DWR be unable to enter into what they regard as a satisfactory agreement with BAAQMD
 39 as contemplated by Mitigation Measure AQ-3a, or should DWR enter into an agreement with
 40 BAAQMD but find themselves unable to meet the performance standards set forth in Mitigation
 41 Measure AQ-3a, DWR will develop an alternative or complementary offsite mitigation program
 42 to reduce criteria pollutant emissions generated by the construction of the water conveyance
 43 facilities associated with BDCP. The offsite mitigation program will offset criteria pollutant
 44 emissions to the required levels identified in Mitigation Measure AQ-3a. Accordingly, the

1 program will ensure that the project does not contribute to or worsen existing air quality
2 exceedances. Whether this program will address emissions beyond NO_x, PM, or ROG, will turn
3 on whether DWR has achieved sufficient reductions of those pollutants pursuant to Mitigation
4 Measure AQ-3a.

5 The offsite mitigation program will establish a program to fund emission reduction projects
6 through grants and similar mechanisms. All projects must provide contemporaneous (occur in
7 the same calendar year as the emission increases) and localized (i.e., within the SFBAAB)
8 emissions benefit to the area of effect. DWR may identify emissions reduction projects through
9 consultation with BAAQMD and ARB, as needed. Potential projects could include, but are not
10 limited to the following.

- 11 • Alternative fuel, low-emission school buses, transit buses, and other vehicles.
- 12 • Diesel engine retrofits and repowers.
- 13 • Locomotive retrofits and repowers.
- 14 • Electric vehicle or lawn equipment rebates.
- 15 • Electric vehicle charging stations and plug-ins.
- 16 • Video-teleconferencing systems for local businesses.
- 17 • Telecommuting start-up costs for local businesses.

18 As part of its alternative or complementary offsite mitigation program, DWR will develop
19 pollutant-specific formulas to monetize, calculate, and achieve emissions reductions in a cost-
20 effective manner. Construction contractors, as a standard specification of their construction
21 contracts with DWR, will identify construction emissions and their share of required offset fees.
22 DWR will verify the emissions estimates submitted by the construction contractors and
23 calculate the required fees. Construction contractors (as applicable) will be required to
24 surrender required fees to DWR prior to the start of construction. Construction contractors will
25 have the discretion to reduce their construction emissions to the lowest possible level through
26 additional onsite mitigation, as the greater the emissions reductions that can be achieved by
27 onsite mitigation, the lower the required offset fee. Acceptable options for reducing emissions
28 may include, but are not limited to, the use of late-model engines, low-emission diesel products,
29 additional electrification or alternative fuels, engine-retrofit technology, and/or after-treatment
30 products. All control strategies must be verified by BAAQMD, the ARB, or by a qualified air
31 quality expert employed by or retained by DWR.

32 The offsite fee, grant, or other mechanism will be calculated or formulated based on the actual
33 cost of pollutant reductions. No collected offset fees will be used to cover administrative costs;
34 offset fees or other payments are strictly limited to procurement of offsite emission reductions.
35 Fees or other payments collected by DWR will be allocated to emissions reductions projects in a
36 grant-like manner. DWR shall document the fee schedule basis, such as consistency with the
37 ARB's Carl Moyer Program cost-effectiveness limits and capital recovery factors.

38 DWR will conduct annual reporting to verify and document that emissions reductions projects
39 achieve a 1:1 reduction with construction emissions to ensure claimed offsets meet the required
40 performance standard. All offsite reductions must be quantifiable, verifiable, enforceable, and
41 satisfy the basic criterion of additionally (i.e., the reductions would not happen without the

1 financial support of purchased offset credits). Annual reports will include, at a minimum the
 2 following components.

- 3 • Total amount of offset fees received.
- 4 • Total fees distributed to offsite projects.
- 5 • Total fees remaining.
- 6 • Projects funded and associated pollutant reductions realized.
- 7 • Total emission reductions realized.
- 8 • Total emissions reductions remaining to satisfy the requirements of Mitigation Measure AQ-
 9 3b.
- 10 • Overall cost-effectiveness of the projects funded.

11 If a sufficient number of emissions reduction projects are not identified to meet the required
 12 performance standard, DWR will consult with BAAQMD, the ARB, or a qualified air quality
 13 expert employed by or retained by DWR to ensure conformity is met through some other means
 14 of achieving the performance standards of achieving net zero (0) for emissions in excess of
 15 General Conformity de minimis thresholds (where applicable) and of achieving quantities below
 16 applicable BAAQMD CEQA thresholds for other pollutants.

17 **Impact AQ-4: Generation of Criteria Pollutants in Excess of the SJVAPCD Regional Thresholds** 18 **during Construction of the Proposed Water Conveyance Facility**

19 **NEPA Effects:** As shown in Table 22-99, construction emissions would exceed SJVAPCD's regional
 20 thresholds for the following pollutants and years, even with implementation of environmental
 21 commitments. All other pollutants would be below air district thresholds and therefore would not
 22 result in an adverse air quality effect.

- 23 • ROG: 2020-2025
- 24 • NO_x: 2018-2028
- 25 • PM10: 2019-2025

26 Since ROG and NO_x are precursors to ozone and NO_x is a precursor to PM, exceedances of SJVAPCD's
 27 ROG and NO_x thresholds could impact both regional ozone and PM formation, which could worsen
 28 regional air quality and air basin attainment of the NAAQS and CAAQS. Similarly, exceedances of
 29 SJVAPCD's PM10 threshold could impede attainment of the NAAQS and CAAQS for PM10.

30 While equipment could operate at any work area identified for this alternative, the highest level of
 31 ROG, NO_x, and PM10 emissions in the SJVAPCD is expected to occur at those sites where the
 32 duration and intensity of construction activities would be greatest. This includes all temporary and
 33 permanent utility sites, as well as all construction sites along the modified pipeline/tunnel
 34 conveyance alignment. For a map of the proposed tunnel alignment under this alternative, see
 35 Mapbook Figure M3-4.

36 Environmental commitments outlined in Appendix 3B, *Environmental Commitments*, will reduce
 37 construction-related emissions; however, as shown in Table 22-99, ROG, NO_x, and PM10 emissions
 38 would still exceed SJVAPCD's regional thresholds identified in Table 22-8 and would result in an
 39 adverse effect to air quality. Mitigation Measures AQ-4a and AQ-4b are available to reduce ROG, NO_x,

1 and PM10 emissions, and would thus address regional effects related to secondary ozone and PM
2 formation.

3 **CEQA Conclusion:** Emissions of ROG, NO_x, and PM10 generated during construction would exceed
4 SJVAPCD's regional significance threshold identified in Table 22-8. Since ROG and NO_x are
5 precursors to ozone and NO_x is a precursor to PM, exceedances of SJVAPCD's ROG and NO_x
6 thresholds could impact both regional ozone and PM formation, which could worsen regional air
7 quality and air basin attainment of the NAAQS and CAAQS. Similarly, exceedances of SJVAPCD's
8 PM10 threshold could impede attainment of the NAAQS and CAAQS for PM10. SJVAPCD's regional
9 emissions thresholds (Table 22-8) have been adopted to ensure projects do not hinder attainment of
10 the CAAQS or NAAQS. The impact of generating ROG, NO_x, and PM10 emissions in excess of
11 SJVAPCD's regional thresholds would therefore violate applicable air quality standards in the Study
12 area and could contribute to or worsen an existing air quality conditions. This would be a significant
13 impact. Mitigation Measures AQ-4a and AQ-4b would be available to reduce ROG, NO_x, and PM10
14 emissions to a less-than-significant level by offsetting emissions to quantities below SJVAPCD CEQA
15 thresholds (see Table 22-8).

16 **Mitigation Measure AQ-4a: Mitigate and Offset Construction-Generated Criteria Pollutant**
17 **Emissions within SJVAPCD/SJVAB to Net Zero (0) for Emissions in Excess of General**
18 **Conformity *De Minimis* Thresholds (Where Applicable) and to Quantities below**
19 **Applicable SJVAPCD CEQA Thresholds for Other Pollutants⁴⁵**

20 DWR will reduce criteria pollutant emissions generated by the construction of the water
21 conveyance facilities associated with BDCP within the SJVAPCD through the creation of
22 offsetting reductions of emissions occurring within the SJVAB. The preferred means of
23 undertaking such offsite mitigation shall be through a partnership with the SJVAPCD involving
24 the payment of offsite mitigation fees. Criteria pollutants in excess of the federal *de minimis*
25 thresholds shall be reduced to net zero (0) (see Table 22-8). Criteria pollutants not in excess of
26 the *de minimis* thresholds, but above any applicable air pollution control or air quality
27 management district CEQA thresholds⁴⁶ shall be reduced to quantities below the numeric
28 thresholds (see Table 22-8).⁴⁷

29 DWR will undertake in good faith an effort to enter into a development mitigation contract with
30 SJVAPCD in order to reduce criteria pollutant emissions generated by the construction of the
31 water conveyance facilities associated with BDCP within the SJVAPCD. The preferred source of
32 emissions reductions for NO_x, PM, and ROG shall be through contributions to SJVAPCD's VERA.
33 The VERA is implemented through the District Incentive Programs and is a measure to reduce
34 project impacts under CEQA. The current VERA payment fee for construction emissions is
35 \$9,350 per ton of NO_x. This is an estimated cost and may change in the future (e.g., future year

⁴⁵ In the title of this mitigation measure, the phrase "for other pollutants" is intended to apply to other alternatives, where associated impacts to other pollutants may exceed thresholds other than NO_x.

⁴⁶ For example, PM10 emissions in a certain year may exceed SJVAPCD's 15 ton annual CEQA threshold, but not the 100 ton annual *de minimis* threshold. According to Appendix G of the State CEQA Guidelines, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make determinations regarding the significance of an impact.

⁴⁷ For example, emissions of NO_x generated by Alternative 1A both exceed the federal *de minimis* threshold for the SJVAB and the SJVAPCD's CEQA threshold. NO_x emissions must therefore be reduced to net zero (0).

1 payment fees for NO_x could be in excess of the current price of \$9,350) and are sensitive to the
 2 number and type of projects requiring emission reductions within the same air basin (Siong
 3 pers. comm. 2012).

4 If DWR is successful in reaching what it regards as a satisfactory agreement with SJVAPCD, DWR
 5 will enter into mitigation contracts with SJVAPCD to reduce NO_x, PM, or ROG (as appropriate)
 6 emissions to the required levels. Such reductions must occur within the SJVAB. required levels
 7 are:

- 8 • For emissions in excess of the federal *de minimis* threshold: **net zero (0)**.
- 9 • For emissions not in excess of *de minimis* thresholds but above the SJVAPCD's standards:
 10 **below the appropriate CEQA threshold levels.**

11 Implementation of this measure would require DWR to adopt the following specific
 12 responsibilities.

- 13 • Consult with the SJVAPCD in good faith with the intention of entering into a mitigation
 14 contract with SJVAPCD for the VERA. For SIP purposes, the necessary reductions must be
 15 achieved (contracted and delivered) by the applicable year in question (i.e., emissions
 16 generated in year 2016 would need to be reduced offsite in 2016). Funding would need to
 17 be received prior to contracting with participants and should allow sufficient time to receive
 18 and process applications to ensure offsite reduction projects are funded and implemented
 19 prior to commencement of BDCP activities being reduced. This would roughly equate to the
 20 equivalent of two months (2) prior to groundbreaking; additional lead time may be
 21 necessary depending on the level of offsite emission reductions required for a specific year.
 22 In negotiating the terms of the mitigation contract, DWR and SJVAPCD should seek
 23 clarification and agreement on SJVAPCD responsibilities, including the following.
 - 24 ○ Identification of appropriate offsite mitigation fees required for BDCP.
 - 25 ○ Processing of mitigation fees paid by DWR.
 - 26 ○ Verification of emissions inventories submitted by DWR
 - 27 ○ Verification that offsite fees are applied to appropriate mitigation programs within the
 28 SJVAB.
- 29 • Quantify mitigation fees required to satisfy the appropriate reductions. An administrative
 30 fee of 4% would be paid by DWR to the SJVAPCD to implement the program. As noted above,
 31 the payment fees may vary by year and are sensitive to the number of projects requiring
 32 reductions within the SJVAB.
- 33 • Develop a compliance program to calculate emissions and collect fees from the construction
 34 contractors for payment to SJVAPCD. The program will require, as a standard or
 35 specification of their construction contracts with DWR, that construction contractors
 36 identify construction emissions and their share of required offsite fees, if applicable. Based
 37 on the emissions estimates, DWR will collect fees from the individual construction
 38 contractors (as applicable) for payment to SJVAPCD. Construction contractors will have the
 39 discretion to reduce their construction emissions to the lowest possible level through
 40 additional onsite mitigation, as the greater the emissions reductions that can be achieved by
 41 onsite mitigation, the lower the required offsite fee. Acceptable options for reducing
 42 emissions may include use of late-model engines, low-emission diesel products, additional

1 electrification or alternative fuels, engine-retrofit technology, and/or after-treatment
2 products. All control strategies must be verified by SJVAPCD.

- 3 • Conduct daily and annual emissions monitoring to ensure onsite emissions reductions are
4 achieved and no additional mitigation payments are required. Excess offsite funds can be
5 carried from previous to subsequent years in the event that additional reductions are
6 achieved by onsite mitigation. At the end of the project, if it is determined that excess offset
7 funds remain (outstanding contracts and administration over the final years of the contracts
8 will be taken into consideration), SJVAPCD and DWR shall determine the disposition of final
9 funds (e.g., additional emission reduction projects to offset underperforming contracts,
10 return of funds to DWR, etc.).

11 If a sufficient number of emissions reduction projects are not identified to meet the required
12 performance standard, DWR will coordinate with SJVAPCD to ensure the performance standards
13 of achieving net zero (0) for emissions in excess of General Conformity *de minimis* thresholds
14 (where applicable) and of achieving quantities below applicable SJVAPCD CEQA thresholds for
15 other pollutants not in excess of the *de minimis* thresholds but above SJVAPCD CEQA thresholds
16 are met.

17 **Mitigation Measure AQ-4b: Develop an Alternative or Complementary Offsite Mitigation**
18 **Program to Mitigate and Offset Construction-Generated Criteria Pollutant Emissions**
19 **within the SJVAPCD/SJVAB to Net Zero (0) for Emissions in Excess of General Conformity**
20 ***De Minimis* Thresholds (Where Applicable) and to Quantities below Applicable SJVAPCD**
21 **CEQA Thresholds for Other Pollutants**

22 Should DWR be unable to enter into what they regard as a satisfactory agreement with SJVAPCD
23 as contemplated by Mitigation Measure AQ-4a, or should DWR enter into an agreement with
24 SJVAPCD but find themselves unable to meet the performance standards set forth in Mitigation
25 Measure AQ-4a, DWR will develop an alternative or complementary offsite mitigation program
26 to reduce criteria pollutant emissions generated by the construction of the water conveyance
27 facilities associated with BDCP. The offsite mitigation program will offset criteria pollutant
28 emissions to the required levels identified in Mitigation Measure AQ-4a. Accordingly, the
29 program will ensure that the project does not contribute to or worsen existing air quality
30 exceedances. Whether this program will address emissions beyond NO_x, PM, or ROG, will turn
31 on whether DWR has achieved sufficient reductions of those pollutants pursuant to Mitigation
32 Measure AQ-4a.

33 The offsite mitigation program will establish a program to fund emission reduction projects
34 through grants and similar mechanisms. All projects must provide contemporaneous (occur in
35 the same calendar year as the emission increases) and localized (i.e., within the SJVAB)
36 emissions benefit to the area of effect. DWR may identify emissions reduction projects through
37 consultation with SJVAPCD and ARB, as needed. Potential projects could include, but are not
38 limited to the following.

- 39 • Alternative fuel, low-emission school buses, transit buses, and other vehicles.
- 40 • Diesel engine retrofits and repowers.
- 41 • Locomotive retrofits and repowers.
- 42 • Electric vehicle or lawn equipment rebates.

- 1 • Electric vehicle charging stations and plug-ins.
- 2 • Video-teleconferencing systems for local businesses.
- 3 • Telecommuting start-up costs for local businesses.

4 As part of its alternative or complementary offsite mitigation program, DWR will develop
 5 pollutant-specific formulas to monetize, calculate, and achieve emissions reductions in a cost-
 6 effective manner. Construction contractors, as a standard specification of their construction
 7 contracts with DWR, will identify construction emissions and their share of required offset fees.
 8 DWR will verify the emissions estimates submitted by the construction contractors and
 9 calculate the required fees. Construction contractors (as applicable) will be required to
 10 surrender required fees to DWR prior to the start of construction. Construction contractors will
 11 have the discretion to reduce their construction emissions to the lowest possible level through
 12 additional onsite mitigation, as the greater the emissions reductions that can be achieved by
 13 onsite mitigation, the lower the required offset fee. Acceptable options for reducing emissions
 14 may include, but are not limited to, the use of late-model engines, low-emission diesel products,
 15 additional electrification or alternative fuels, engine-retrofit technology, and/or after-treatment
 16 products. All control strategies must be verified by SJVAPCD, the ARB, or by a qualified air
 17 quality expert employed by or retained by DWR.

18 The offsite fee, grant, or other mechanism will be calculated or formulated based on the actual
 19 cost of pollutant reductions. No collected offset fees will be used to cover administrative costs;
 20 offset fees or other payments are strictly limited to procurement of offsite emission reductions.
 21 Fees or other payments collected by DWR will be allocated to emissions reductions projects in a
 22 grant-like manner. DWR shall document the fee schedule basis, such as consistency with the
 23 ARB's Carl Moyer Program cost-effectiveness limits and capital recovery factors.

24 DWR will conduct annual reporting to verify and document that emissions reductions projects
 25 achieve a 1:1 reduction with construction emissions to ensure claimed offsets meet the required
 26 performance standard. All offsite reductions must be quantifiable, verifiable, enforceable, and
 27 satisfy the basic criterion of additionally (i.e., the reductions would not happen without the
 28 financial support of purchased offset credits). Annual reports will include, at a minimum the
 29 following components.

- 30 • Total amount of offset fees received.
- 31 • Total fees distributed to offsite projects.
- 32 • Total fees remaining.
- 33 • Projects funded and associated pollutant reductions realized.
- 34 • Total emission reductions realized.
- 35 • Total emissions reductions remaining to satisfy the requirements of Mitigation Measure AQ-
 36 4b.
- 37 • Overall cost-effectiveness of the projects funded.

38 If a sufficient number of emissions reduction projects are not identified to meet the required
 39 performance standard, DWR will consult with SJVAPCD, the ARB, or a qualified air quality expert
 40 employed by or retained by DWR to ensure conformity is met through some other means of
 41 achieving the performance standards of achieving net zero (0) for emissions in excess of General

1 Conformity *de minimis* thresholds (where applicable) and of achieving quantities below
2 applicable SJVAPCD CEQA thresholds for other pollutants.

3 **Impact AQ-5: Generation of Criteria Pollutants in Excess of the SMAQMD Regional Thresholds**
4 **from Operation and Maintenance of the Proposed Water Conveyance Facility**

5 **NEPA Effects:** Operations and maintenance in SMAQMD include both routine activities and yearly
6 maintenance. Daily activities at all pumping plants and intakes are covered by maintenance,
7 management, repair, and operating crews. Yearly maintenance would include annual inspections,
8 tunnel dewatering, and sediment removal (see Appendix 22A, *Air Quality Analysis Methodology*, for
9 additional detail). The highest concentration of operational emissions in the SMAQMD are expected
10 at intake and intake pumping plant sites along the east bank of the Sacramento River, as well as at
11 the intermediate forebay (and control structure) site west of South Stone Lake and east of the
12 Sacramento River. As shown in Table 22-100, operation and maintenance activities under
13 Alternative 4 would not exceed SMAQMD's regional thresholds of significance and there would be no
14 adverse effect (see Table 22-8). Accordingly, project operations would not contribute to or worsen
15 existing air quality exceedances. There would be no adverse effect.

16 **CEQA Conclusion:** Emissions generated during operation and maintenance activities would not
17 exceed SMAQMD regional thresholds for criteria pollutants. SMAQMD's regional emissions
18 thresholds (Table 22-8) have been adopted to ensure projects do not hinder attainment of the
19 CAAQS. The impact of generating emissions in excess of local air district would therefore violate
20 applicable air quality standards in the Study area and could contribute to or worsen an existing air
21 quality conditions. Because project operations would not exceed SMAQMD regional thresholds, the
22 impact would be less than significant. No mitigation is required.

23 **Impact AQ-6: Generation of Criteria Pollutants in Excess of the YSAQMD Regional Thresholds**
24 **from Operation and Maintenance of the Proposed Water Conveyance Facility**

25 **NEPA Effects:** Alternative 4 would not construct any permanent features in the YSAQMD that would
26 require routine operations and maintenance. No operational emissions would be generated in the
27 YSAQMD. Consequently, operation of Alternative 4 would neither exceed the YSAQMD regional
28 thresholds of significance nor result in an adverse effect to air quality.

29 **CEQA Conclusion:** No operational emissions would be generated in the YSAQMD. Consequently,
30 operation of Alternative 4 would not exceed the YSAQMD regional thresholds of significance. This
31 impact would be less than significant. No mitigation is required.

32 **Impact AQ-7: Generation of Criteria Pollutants in Excess of the BAAQMD Regional Thresholds**
33 **from Operation and Maintenance of the Proposed Water Conveyance Facility**

34 **NEPA Effects:** Operations and maintenance in BAAQMD include both routine activities and major
35 inspections. Daily activities at the pumping plants are covered by maintenance, management, repair,
36 and operating crews. Yearly maintenance would include annual inspections, tunnel dewatering, and
37 sediment removal (see Appendix 22A, *Air Quality Analysis Methodology*, for additional detail). The
38 highest concentration of operational emissions in the BAAQMD is expected at the Byron Tract
39 Forebay and Clifton Court Forebay (including control gates and the combined pumping plant). As
40 shown in Table 22-100, operation and maintenance activities under Alternative 4 would not exceed
41 BAAQMD's thresholds of significance (see Table 22-8). Thus, project operations would not
42 contribute to or worsen existing air quality exceedances. There would be no adverse effect.

1 **CEQA Conclusion:** Emissions generated during operation and maintenance activities would not
 2 exceed BAAQMD regional thresholds for criteria pollutants. BAAQMD's regional emissions
 3 thresholds (Table 22-8) have been adopted to ensure projects do not hinder attainment of the
 4 CAAQS. The impact of generating emissions in excess of local air district thresholds would violate
 5 applicable air quality standards in the Study area and could contribute to or worsen an existing air
 6 quality conditions. Because project operations would not exceed BAAQMD regional thresholds, the
 7 impact would be less than significant. No mitigation is required.

8 **Impact AQ-8: Generation of Criteria Pollutants in Excess of the SJVAPCD Regional Thresholds**
 9 **from Operation and Maintenance of the Proposed Water Conveyance Facility**

10 **NEPA Effects:** Operations and maintenance in SJVAPCD include annual inspections and tunnel
 11 dewatering (see Appendix 22A, *Air Quality Analysis Methodology*, for additional detail). The highest
 12 concentration of operational emissions in the SJVAPCD is expected at routine inspection sites along
 13 the modified pipeline/tunnel conveyance alignment. For a map of the proposed tunnel alignment
 14 under this alternative, see Mapbook Figure M3-4. As shown in Table 22-100, operation and
 15 maintenance activities under Alternative 4 would not exceed SJVAPCD's thresholds of significance
 16 (see Table 22-8). Accordingly, project operations would not contribute to or worsen existing air
 17 quality exceedances. There would be no adverse effect.

18 **CEQA Conclusion:** Emissions generated during operation and maintenance activities would not
 19 exceed SJVAPCD's regional thresholds of significance. SJVAPCD's regional emissions thresholds
 20 (Table 22-8) have been adopted to ensure projects do not hinder attainment of the CAAQS. The
 21 impact of generating emissions in excess of local air district thresholds would violate applicable air
 22 quality standards in the Study area and could contribute to or worsen an existing air quality
 23 conditions. Because project operations would not exceed SJVAPCD regional thresholds, the impact
 24 would be less than significant. No mitigation is required.

25 **Impact AQ-9: Exposure of Sensitive Receptors to Health Hazards from Localized Particulate**
 26 **Matter in Excess of SMAQMD's Health-Based Concentration Thresholds**

27 **NEPA Effects:** Respirable particulates pose a public health threat by bypassing the defenses within
 28 the mucous ciliary system and entering deep lung tissue. Particulates are derived from a variety of
 29 sources, including windblown dust and fuel combustion. As shown in Table 22-92, construction
 30 would increase PM10 and PM2.5 emissions in SMAQMD, which may pose inhalation-related health
 31 risks for receptors exposed to certain concentrations.

32 PM2.5 and PM10 concentrations at sensitive receptors locations were assessed using the EPA's
 33 AERMOD dispersion. The methodology described in Section 22.3.1.3 provides a more detailed
 34 summary of the approach used to conduct the analysis. Appendix 22C, *Bay Delta Conservation Plan*
 35 *Air Dispersion Modeling and Health Risk Assessment for Construction Emissions*, provides an in-depth
 36 discussion of the methodology and results.

37 Table 22-101 shows the highest predicted annual and daily (24-hour) PM10 and PM2.5
 38 concentrations in SMAQMD. Exceedances of air district thresholds are shown in underline.

1 **Table 22-101. Alternative 4 PM10 and PM2.5 Concentration Results in SMAQMD**

Parameter	PM10		PM2.5	
	Annual ($\mu\text{g}/\text{m}^3$)	24-Hour ($\mu\text{g}/\text{m}^3$)	Annual ($\mu\text{g}/\text{m}^3$)	24-Hour ($\mu\text{g}/\text{m}^3$)
Maximum Value	0.4	<u>3.2</u>	0.06	0.52
<i>SMAQMD Threshold</i>	1	2.5	0.6	-

Appendix 22C, *Bay Delta Conservation Plan Air Dispersion Modeling and Health Risk Assessment for Construction Emissions*, includes modeling results for all receptors.
 $\mu\text{g}/\text{m}^3$ = micrograms per cubic meter

2

3 All annual PM10 and PM2.5 concentrations are less than SMAQMD's annual thresholds. However, as
4 shown in Table 22-101, the maximum predicted 24-hour PM10 threshold exceeds SMAQMD's
5 threshold of 2.5 $\mu\text{g}/\text{m}^3$. Exceedances of the threshold would occur at 10 receptor locations near
6 intakes, tunnels, transmission lines, and highway reconstruction. The exceedances would be
7 temporary and occur intermittently due to soil disturbance.

8 DWR has identified several environmental commitments to reduce construction-related particulate
9 matter in the SMAQMD (see Appendix 3B, *Environmental Commitments*). Consistent with air district
10 guidance, these commitments constitute mitigation measures which include implementation of all
11 feasible onsite fugitive dust controls, such as regular watering. While these commitments will
12 reduce localized particulate matter emissions, concentrations at adjacent receptor locations would
13 still exceed SMAQMD's 24-hour PM10 threshold. Receptors exposed to PM10 concentrations in
14 excess of SMAQMD's threshold could experience increased risk for adverse human health effects.
15 Mitigation Measure AQ-9 is available to address this effect.

16 **CEQA Conclusion:** Respirable particulates pose a human health hazard by bypassing the defenses
17 within the mucous ciliary system and entering deep lung tissue. Construction of Alternative 4 would
18 result in the short-term exposure of sensitive receptors to annual concentrations of PM2.5 that are
19 below the significance thresholds established by the SMAQMD. Accordingly, no significant localized
20 impact would occur with respect to PM2.5.

21 A total of 10 receptor locations would be exposed to 24-hour PM10 concentrations that exceed
22 SMAQMD's threshold. This is a significant impact. The exceedances would occur intermittently due
23 to soil disturbance and during days with most intensive construction activities. The significant
24 impacts at the receptors locations are therefore temporary.

25 Mitigation Measure AQ-9 outlines a tiered strategy to reduce PM concentrations and public exposure
26 to significant health hazards. Specifically, DWR will utilize dust suppressants (Pennzsuppress) on all
27 unpaved surfaces to control fugitive dust emissions. The suppressants would be used in place of
28 water and have a control efficiency of approximately 85% (California Air Resources Board 2012b). If
29 concentrations still exceed air district thresholds with application of suppressants, DWR will offer
30 relocation assistance to affected receptors. If accepted, relocation would reduce this impact to less
31 than significant. However, if landowners choose not to accept DWR's offer of relocation assistance,
32 DWR will pave all areas in which vehicles travel. Paving roadways reduces entrained road dust by
33 approximately 99% (Countess Environmental 2006), and as shown in Table 22-102, would reduce
34 PM10 concentrations at the maximum exposed receptor to below SMAQMD thresholds. Accordingly,
35 this impact would be less than significant.

1 **Table 22-102. Alternative 4 Mitigated PM10 and PM2.5 Concentration Results in SMAQMD**

Parameter	PM10		PM2.5	
	Annual ($\mu\text{g}/\text{m}^3$)	24-Hour ($\mu\text{g}/\text{m}^3$)	Annual ($\mu\text{g}/\text{m}^3$)	24-Hour ($\mu\text{g}/\text{m}^3$)
Maximum Value	0.1	2.1	0.04	0.4
<i>SMAQMD Threshold</i>	1	2.5	0.6	-

Appendix 22C, *Bay Delta Conservation Plan Air Dispersion Modeling and Health Risk Assessment for Construction Emissions*, includes modeling results for all receptors.
 $\mu\text{g}/\text{m}^3$ = micrograms per cubic meter

2
3 **Mitigation Measure AQ-9: Implement Measures to Reduce Re-Entrained Road Dust and**
4 **Receptor Exposure to PM2.5 and PM10**

5 The project sponsor (DWR) would employ a tiered approach to reduce re-entrained road dust
6 and receptor exposure to PM2.5 and PM10. The approach would be taken in following way:

- 7 • PM10 that could exceed the threshold at sensitive receptors will be further reduced by
8 applying dust suppressants (Pennzsuppress);
- 9 • If additional dust suppressants eliminate the issue at all receptors no further mitigation is
10 needed; if not, DWR will offer temporary relocation of the affected residence; if that is
11 accepted no additional mitigation is required; if relocation is not accepted then;
- 12 • DWR will pave portions of the work sites until all exceedances are eliminated and impacts
13 are determined to be less than significant.

14 **Impact AQ-10: Exposure of Sensitive Receptors to Health Hazards from Localized Particulate**
15 **Matter in Excess of YSAQMD's Health-Based Concentration Thresholds**

16 **NEPA Effects:** As shown in Table 22-99, construction would increase PM10 and PM2.5 emissions in
17 YSAQMD, which may pose inhalation-related health risks for receptors exposed to certain
18 concentrations.

19 PM2.5 and PM10 concentrations at sensitive receptors locations were assessed using the EPA's
20 AERMOD dispersion. The methodology described in Section 22.3.1.3 provides a more detailed
21 summary of the approach used to conduct the analysis. Appendix 22C, *Bay Delta Conservation Plan*
22 *Air Dispersion Modeling and Health Risk Assessment for Construction Emissions*, provides an in-depth
23 discussion of the methodology and results.

24 As shown in Table 22-103, predicted PM2.5 and PM10 concentrations are less than YSAQMD's
25 adopted thresholds. The project would also implement all air-district recommended onsite fugitive
26 dust controls, such as regular watering. Accordingly, this alternative's effect of exposure of sensitive
27 receptors to localized particulate matter concentrations would not be adverse.

1 **Table 22-103. Alternative 4 PM10 and PM2.5 Concentration Results in YSAQMD**

Parameter	PM10		PM2.5	
	Annual ($\mu\text{g}/\text{m}^3$)	24-Hour ($\mu\text{g}/\text{m}^3$)	Annual ($\mu\text{g}/\text{m}^3$)	24-Hour ($\mu\text{g}/\text{m}^3$)
Maximum Value	0.6	2.5	0.01	0.4
<i>YSAQMD Threshold</i>	20	50	12	35

Appendix 22C, *Bay Delta Conservation Plan Air Dispersion Modeling and Health Risk Assessment for Construction Emissions*, includes modeling results for all receptors.
 $\mu\text{g}/\text{m}^3$ = micrograms per cubic meter

2
3 **CEQA Conclusion:** Respirable particulates pose human health hazard by bypassing the defenses
4 within the mucous ciliary system and entering deep lung tissue. Construction of Alternative 4 would
5 result in PM2.5 and PM10 concentrations at receptor locations that are below the significance
6 thresholds adopted by the YSAQMD. As such, localized particulate matter concentrations at analyzed
7 receptors would not result in significant human health impacts. No mitigation is required.

8 **Impact AQ-11: Exposure of Sensitive Receptors to Health Hazards from Localized Particulate**
9 **Matter in Excess of BAAQMD's Health-Based Concentration Thresholds**

10 **NEPA Effects:** As shown in Table 22-99, construction would increase PM10 and PM2.5 emissions in
11 BAAQMD, which may pose inhalation-related health risks for receptors exposed to certain
12 concentrations.

13 PM2.5 and PM10 concentrations at sensitive receptors locations were assessed using the EPA's
14 AERMOD dispersion. The methodology described in Section 22.3.1.3 provides a more detailed
15 summary of the approach used to conduct the analysis. Appendix 22C, *Bay Delta Conservation Plan*
16 *Air Dispersion Modeling and Health Risk Assessment for Construction Emissions*, provides an in-depth
17 discussion of the methodology and results.

18 As shown in Table 22-104, maximum predicted PM2.5 concentrations are less than BAAQMD's
19 adopted threshold. The project would also implement all air-district recommended onsite fugitive
20 dust controls, such as regular watering. Accordingly, this alternative's effect of exposure of sensitive
21 receptors to localized particulate matter concentrations would not be adverse.

22 **Table 22-104. Alternative 4 PM10 and PM2.5 Concentration Results in BAAQMD**

Parameter	PM10		PM2.5	
	Annual ($\mu\text{g}/\text{m}^3$)	24-Hour ($\mu\text{g}/\text{m}^3$)	Annual ($\mu\text{g}/\text{m}^3$)	24-Hour ($\mu\text{g}/\text{m}^3$)
Maximum Value	0.21	37	0.04	6.00
<i>BAAQMD Threshold</i>	-	-	0.3	-

Appendix 22C, *Bay Delta Conservation Plan Air Dispersion Modeling and Health Risk Assessment for Construction Emissions*, includes modeling results for all receptors.
 $\mu\text{g}/\text{m}^3$ = micrograms per cubic meter

23
24 **CEQA Conclusion:** Respirable particulates pose human health hazard by bypassing the defenses
25 within the mucous ciliary system and entering deep lung tissue. Construction of Alternative 4 would
26 result in PM2.5 and PM10 concentrations at receptor locations that are below the significance

1 thresholds established by the BAAQMD. As such, localized particulate matter concentrations at
2 analyzed receptors would not result in significant human health impacts. No mitigation is required.

3 **Impact AQ-12: Exposure of Sensitive Receptors to Health Hazards from Localized Particulate** 4 **Matter in Excess of SJVAPCD's Health-Based Concentration Thresholds**

5 **NEPA Effects:** As shown in Table 22-99, construction would increase PM10 and PM2.5 emissions in
6 SJVAPCD, which may pose inhalation-related health risks for receptors exposed to certain
7 concentrations.

8 PM2.5 and PM10 concentrations at sensitive receptors locations were assessed using the EPA's
9 AERMOD dispersion. The methodology described in Section 22.3.1.3 provides a more detailed
10 summary of the approach used to conduct the analysis. Appendix 22C, *Bay Delta Conservation Plan*
11 *Air Dispersion Modeling and Health Risk Assessment for Construction Emissions*, provides an in-depth
12 discussion of the methodology and results.

13 As shown in Table 22-105, predicted PM2.5 and PM10 concentrations are less than SJVAPCD's
14 adopted threshold. The project would also implement all air-district recommended onsite fugitive
15 dust controls, such as regular watering. Accordingly, this alternative's effect of exposure of sensitive
16 receptors to localized particulate matter concentrations would not be adverse.

17 **Table 22-105. Alternative 4 PM10 and PM2.5 Concentration Results in SJVAPCD**

Parameter	PM10		PM2.5	
	Annual ($\mu\text{g}/\text{m}^3$)	24-Hour ($\mu\text{g}/\text{m}^3$)	Annual ($\mu\text{g}/\text{m}^3$)	24-Hour ($\mu\text{g}/\text{m}^3$)
Maximum Value	0.09	6.9	0.02	1.1
<i>SJVAPCD Threshold</i>	<i>2.08</i>	<i>10.4</i>	<i>2.08</i>	<i>10.4</i>

Appendix 22C, *Bay Delta Conservation Plan Air Dispersion Modeling and Health Risk Assessment for Construction Emissions*, includes modeling results for all receptors.
 $\mu\text{g}/\text{m}^3$ = micrograms per cubic meter

18
19 **CEQA Conclusion:** Respirable particulates pose human health hazard by bypassing the defenses
20 within the mucous ciliary system and entering deep lung tissue. Construction of Alternative 4 would
21 result in PM2.5 and PM10 concentrations at receptor locations that are below the significance
22 thresholds established by the SJVAPCD. As such, localized particulate matter concentrations at
23 analyzed receptors would not result in significant human health impacts. No mitigation is required.

24 **Impact AQ-13: Exposure of Sensitive Receptors to Health Hazards from Localized Carbon** 25 **Monoxide**

26 **NEPA Effects:** Continuous engine exhaust may elevate localized CO concentrations. Receptors
27 exposed to these CO "hot-spots" may have a greater likelihood of developing adverse health effects
28 (as described in Section 22.1.2). CO hot-spots are typically observed at heavily congested
29 intersections where a substantial number of gasoline-powered vehicles idle for prolonged durations
30 throughout the day. Construction sites are less likely to result in localized CO hot-spots due to the
31 nature of construction activities (Sacramento Metropolitan Air Quality Management District 2014),
32 which normally utilize diesel-powered equipment for intermittent or short durations. Moreover,
33 construction sites must comply with the Occupational Safety and Health Administration's (OSHA) CO
34 exposure standards for onsite workers. Unlike regional pollutants (e.g., ROG and NO_x), CO

1 concentrations also dissipate as a function of distance and will therefore be lower at offsite receptor
 2 locations. Accordingly, given that construction activities typically do not result in CO hot-spots,
 3 onsite concentrations must comply with OSHA standards, and CO levels dissipate as a function of
 4 distance, equipment-generated CO emissions (see Table 22-99) are not anticipated to result in
 5 adverse health hazards to sensitive receptors.

6 Construction traffic may contribute to increased roadway congestion, which could lead to conditions
 7 conducive to CO hot-spot formation. Chapter 19, *Transportation*, analyzes peak-hour traffic volumes
 8 during construction on local roadway segments. The assessment is inclusive of baseline traffic
 9 volumes plus background growth and project trips or 'baseline plus background growth plus
 10 project' or BPBGPP. While the traffic analysis was performed for roadway segments, as opposed to
 11 intersections, the results can be used as a conservative indication of potential traffic volumes at local
 12 intersections, assuming all vehicles would travel through a single intersection.

13 As shown in Table 19-29, the highest peak hour traffic volumes under BPBGPP—12,050 vehicles per
 14 hour—would occur on westbound Interstate 80 between Suisun Valley Road and State Route 12.
 15 This is about half of the congested traffic volume modeled by BAAQMD (24,000 vehicles per hour)
 16 that would be needed to contribute to a localized CO hot-spot, and less than half of the traffic volume
 17 modeled by SMAQMD (31,600 vehicles per hour). The BAAQMD's and SMAQMD's CO screening
 18 criteria were developed based on County average vehicle fleets that are primarily comprised of
 19 gasoline vehicles. Construction vehicles would be predominantly diesel trucks, which generate
 20 fewer CO emissions per idle-hour and vehicle mile traveled than gasoline-powered vehicles.
 21 Accordingly, the air district screening thresholds provide a conservative evaluation threshold for the
 22 assessment of potential CO emissions impacts during construction.

23 Based on the above analysis, even if all 8,088 vehicles on the modeled traffic segment drove through
 24 the same intersection in the peak hour, CO concentrations adjacent to the traveled way would not
 25 exceed the CAAQS or NAAQS according to BAAQMD's and SMAQMD's screening criteria. Thus,
 26 construction traffic is not anticipated to result in adverse health hazards to sensitive receptors.

27 **CEQA Conclusion:** Continuous engine exhaust may elevate localized CO concentrations. Receptors
 28 exposed to these CO "hot-spots" may have a greater likelihood of developing adverse health effects.
 29 Construction sites are less likely to result in localized CO hot-spots due to the nature of construction
 30 activities (Sacramento Metropolitan Air Quality Management District 2014), which normally utilize
 31 diesel-powered equipment for intermittent or short durations. Moreover, construction sites must
 32 comply with the OSHA CO exposure standards for onsite workers. Accordingly, given that
 33 construction activities typically do not result in CO hot-spots, onsite concentrations must comply
 34 with OSHA standards, and CO levels dissipate as a function of distance, equipment-generated CO
 35 emissions are not anticipated to result in significant health hazards to sensitive receptors. Similarly,
 36 peak-hour construction traffic on local roadways would not exceed BAAQMD's or SMAQMD's
 37 conservative screening criteria for the formation potential CO hot-spots. This impact would be less
 38 than significant. No mitigation is required.

39 **Impact AQ-14: Exposure of Sensitive Receptors to Health Hazards from Diesel Particulate** 40 **Matter in Excess of SMAQMD's Chronic Non-Cancer and Cancer Risk Assessment Thresholds**

41 **NEPA Effects:** Diesel-fueled engines, which generate DPM, would be used during construction of the
 42 proposed water conveyance facility. These coarse and fine particles may be composed of elemental
 43 carbon with adsorbed materials, such as organic compounds, sulfate, nitrate, metals, and other trace
 44 elements. The coarse and fine particles are respirable, which means that they can avoid many of the

1 human respiratory system's defense mechanisms and enter deeply into the lungs, and as such, DPM
2 poses inhalation-related chronic non-cancer hazard and cancer risk

3 As shown in Table 22-99, construction would result in an increase of DPM emissions in the Study
4 area, particularly near sites involving the greatest duration and intensity of equipment. Receptor
5 exposure to construction DPM emissions was assessed by predicting the health risks in terms of
6 excess cancer and non-cancer hazard impacts using the EPA's AERMOD dispersion modeling and
7 guidance published by OEHHA. The methodology described in Section 22.3.1.3 provides a more
8 detailed summary of the approach used to conduct the HRA. Appendix 22C, *Bay Delta Conservation
9 Plan Air Dispersion Modeling and Health Risk Assessment for Construction Emissions*, provides an in-
10 depth discussion of the HRA methodology and results.

11 The results of the HRA are summarized in Table 22-106 and are compared to SMAQMD's health risk
12 thresholds. As shown in Table 22-106, Alternative 4 would not exceed the SMAQMD's chronic non-
13 cancer or cancer thresholds and, thus, would not expose sensitive receptors to substantial pollutant
14 concentrations. Therefore, this alternative's effect of exposure of sensitive receptors to DPM
15 emissions and their health hazards during construction would not be adverse.

16 **CEQA Conclusion:** DPM generated during construction poses inhalation-related chronic non-cancer
17 hazard and cancer risk if adjacent receptors are exposed to significant concentrations for prolonged
18 durations. The DPM generated during Alternative 4 construction would not exceed the SMAQMD's
19 chronic non-cancer or cancer thresholds, and thus would not expose sensitive receptors to
20 substantial pollutant concentrations. Therefore, this impact for DPM emissions would be less than
21 significant. No mitigation is required.

22 **Table 22-106. Alternative 4 Health Hazards in the Sacramento Metropolitan Air Quality**
23 **Management District**

Parameter	Chronic Health Hazard	Cancer Health Risk
Maximum Value	0.001	5 per million
Thresholds	1	10 per million

Source: Appendix 22C, *Bay Delta Conservation Plan Air Dispersion Modeling and Health Risk Assessment for Construction Emissions*.

24
25 **Impact AQ-15: Exposure of Sensitive Receptors to Health Hazards from Diesel Particulate**
26 **Matter in Excess of YSAQMD's Chronic Non-Cancer and Cancer Risk Thresholds**

27 **NEPA Effects:** As shown in Table 22-99, construction of Alternative 4 would result in an increase of
28 DPM emissions in YSAQMD, which poses inhalation-related chronic non-cancer hazard and cancer
29 risks if adjacent receptors are exposed to significant DPM concentrations for prolonged durations.

30 Receptor exposure to construction DPM emissions was assessed by predicting the health risks in
31 terms of excess cancer and non-cancer hazard impacts using the EPA's AERMOD dispersion
32 modeling and guidance published by OEHHA. Based on HRA results detailed in Appendix 22C, *Bay
33 Delta Conservation Plan Air Dispersion Modeling and Health Risk Assessment for Construction
34 Emissions*, Alternative 4 would not exceed YSAQMD's non-cancer or cancer health thresholds (see
35 Table 22-107) and, thus, would not expose sensitive receptors to substantial pollutant
36 concentrations. Therefore, this alternative's effect of exposure of sensitive receptors to DPM
37 emissions and their health hazards during construction would not be adverse.

1 **CEQA Conclusion:** DPM generated during construction poses inhalation-related chronic non-cancer
 2 hazard and cancer risk if adjacent receptors are exposed to significant concentrations for prolonged
 3 durations. The DPM generated during Alternative 4 construction would not exceed the YSAQMD's
 4 chronic non-cancer or cancer thresholds, and thus would not expose sensitive receptors to
 5 substantial health hazards. Therefore, this impact for DPM emissions would be less than significant.
 6 No mitigation is required.

7 **Table 22-107. Alternative 4 Health Hazards from DPM Exposure in the Yolo-Solano Air Quality**
 8 **Management District**

Parameter	Chronic Health Hazard	Cancer Health Risk
Maximum Value	0.0003	1 per million
<i>YSAQMD Thresholds</i>	<i>1</i>	<i>10 per million</i>

Source: Appendix 22C, *Bay Delta Conservation Plan Air Dispersion Modeling and Health Risk Assessment for Construction Emissions*

Note: Emissions would not be generated in Yolo County. However, emissions from the adjacent Sacramento County could affect sensitive receptors in Yolo County.

9
 10 **Impact AQ-16: Exposure of Sensitive Receptors to Health Hazards from Diesel Particulate**
 11 **Matter in Excess of BAAQMD's Chronic Non-Cancer and Cancer Risk Thresholds**

12 **NEPA Effects:** As shown in Table 22-99, construction would result in an increase of DPM emissions
 13 in the BAAQMD, particularly near sites involving the greatest duration and intensity of construction
 14 activities. DPM poses inhalation-related chronic non-cancer hazard and cancer risks if adjacent
 15 receptors are exposed to significant DPM concentrations for prolonged durations.

16 Receptor exposure to construction DPM emissions was assessed by predicting the health risks in
 17 terms of excess cancer and non-cancer hazard impacts using the EPA's AERMOD dispersion
 18 modeling and guidance published by OEHHA. Based on the HRA results detailed in Appendix 22C,
 19 *Bay Delta Conservation Plan Air Dispersion Modeling and Health Risk Assessment for Construction*
 20 *Emissions*, Alternative 4 would not exceed the BAAQMD's chronic non-cancer or cancer thresholds
 21 (see Table 22-108) and, thus, would not expose sensitive receptors to substantial pollutant
 22 concentrations. Therefore, this alternative's effect of exposure of sensitive receptors to DPM
 23 emissions and their health hazards during construction would not be adverse.

24 **CEQA Conclusion:** DPM generated during construction poses inhalation-related chronic non-cancer
 25 hazard and cancer risk if adjacent receptors are exposed to significant concentrations for prolonged
 26 durations. The DPM generated during Alternative 4 construction would not exceed the BAAQMD's
 27 chronic non-cancer or cancer thresholds. Therefore, this impact for DPM emissions would be less
 28 than significant. No mitigation is required.

1 **Table 22-108. Alternative 4 Health Hazards from DPM Exposure in the Bay Area Air Quality**
 2 **Management District**

Parameter	Chronic Health Hazard	Cancer Health Risk
Maximum Value	0.001	5 per million
<i>BAAQMD Thresholds</i>	<i>1</i>	<i>10 per million</i>

Source: Appendix 22C, *Bay Delta Conservation Plan Air Dispersion Modeling and Health Risk Assessment for Construction Emissions.*

3
 4 **Impact AQ-17: Exposure of Sensitive Receptors to Health Hazards from Diesel Particulate**
 5 **Matter in Excess of SJVAPCD's Chronic Non-Cancer and Cancer Risk Thresholds**

6 **NEPA Effects:** As shown in Table 22-99, construction would result in an increase of DPM emissions
 7 in the Study area, particularly near sites involving the greatest duration and intensity of equipment.
 8 DPM poses inhalation-related chronic non-cancer hazard and cancer risks if adjacent receptors are
 9 exposed to significant DPM concentrations for prolonged durations.

10 Receptor exposure to construction DPM emissions was assessed by predicting the health risks in
 11 terms of excess cancer and non-cancer hazard impacts using the EPA's AERMOD dispersion
 12 modeling and guidance published by OEHHA. Based on HRA results detailed in Appendix 22C, *Bay*
 13 *Delta Conservation Plan Air Dispersion Modeling and Health Risk Assessment for Construction*
 14 *Emissions*, Alternative 4 would not exceed the SJVAPCD's chronic non-cancer or cancer thresholds
 15 (Table 22-109) and, thus, would not expose sensitive receptors to substantial pollutant
 16 concentrations. Therefore, this alternative's effect of exposure of sensitive receptors to DPM
 17 emissions and their health hazards during construction would not be adverse.

18 **CEQA Conclusion:** DPM generated during construction poses inhalation-related chronic non-cancer
 19 hazard and cancer risk if adjacent receptors are exposed to significant concentrations for prolonged
 20 durations. The DPM generated during Alternative 4 construction would not exceed the SJVAPCD's
 21 chronic non-cancer or cancer thresholds, and thus would not expose sensitive receptors to
 22 substantial pollutant concentrations. Therefore, this impact for DPM emissions would be less than
 23 significant. No mitigation is required.

24 **Table 22-109. Alternative 4 Health Hazards in the San Joaquin Valley Air Pollution Control District**

Parameter	Chronic Health Hazard	Cancer Health Risk
Maximum Value	0.0008	3 per million
<i>SJVAPCD Thresholds</i>	<i>1</i>	<i>10 per million</i>

Source: Appendix 22C, *Bay Delta Conservation Plan Air Dispersion Modeling and Health Risk Assessment for Construction Emissions.*

25
 26 **Impact AQ-18: Exposure of Sensitive Receptors to *Coccidioides immitis* (Valley Fever)**

27 **NEPA Effects:** Disturbance of soil containing *C. immitis* could expose the receptors adjacent to the
 28 construction site to spores known to cause Valley Fever. Areas endemic to *C. immitis* are generally
 29 arid to semiarid with low annual rainfall, and as such, soil containing the fungus is commonly found
 30 in Southern California and throughout the Central Valley. Table 22-22 summarizes Valley Fever
 31 hospitalization rates between 2002 and 2010 in affected California counties and indicates that over

1 60% of Valley Fever cases have been in people who live in the San Joaquin Valley. Within the Plan
 2 Area, San Joaquin County has the highest hospitalization rate due to Valley Fever and is the 8th most
 3 affected county in the State. By comparison, hospitalization rates in Sacramento and Contra Costa
 4 counties are relatively low.

5 The presence of *C. immitis* in the Plan Area does not guarantee that CM1 construction activities
 6 would result in increased incidence of Valley Fever. Propagation of *C. immitis* is dependent on
 7 climatic conditions, with the potential for growth and surface exposure highest following early
 8 seasonal rains and long dry spells. *C. immitis* spores can be released when filaments are disturbed by
 9 earthmoving activities, although receptors must be exposed to and inhale the spores to be at
 10 increased risk of developing Valley Fever. Moreover, exposure to *C. immitis* does not guarantee that
 11 an individual will become ill—approximately 60 percent of people exposed to the fungal spores are
 12 asymptomatic and show no signs of an infection (United States Geological Survey 2000).

13 While there are a number of factors that influence receptor exposure and development of Valley
 14 Fever, earthmoving activities during construction could release *C. immitis* spores if filaments are
 15 present and other soil chemistry and climatic conditions are conducive to spore development.
 16 Receptors adjacent to the construction area may therefore be exposed to increase risk of inhaling *C.*
 17 *immitis* spores and subsequent development of Valley Fever. Dust-control measures are the primary
 18 defense against infection (United States Geological Survey 2000). Implementation of advanced air-
 19 district recommended fugitive dust controls outlined in Appendix 3B, *Environmental Commitments*,
 20 would avoid dusty conditions and reduce the risk of contracting Valley Fever through routine
 21 watering and other controls. Therefore, this alternative's effect of exposure of sensitive receptors to
 22 increased Valley Fever risk during construction would not be adverse.

23 **CEQA Conclusion:** Construction of the water conveyance facility would involve earthmoving
 24 activities that could release *C. immitis* spores if filaments are present and other soil chemistry and
 25 climatic conditions are conducive to spore development. Receptors adjacent to the construction area
 26 may therefore be exposed to increase risk of inhaling *C. immitis* spores and subsequent development
 27 of Valley Fever. Implementation of air-district recommended fugitive dust controls outlined in
 28 Appendix 3B, *Environmental Commitments*, would avoid dusty conditions and reduce the risk of
 29 contracting Valley Fever through routine watering and other controls. Therefore, this impact would
 30 be less than significant. No mitigation is required.

31 **Impact AQ-19: Creation of Potential Odors Affecting a Substantial Number of People during** 32 **Construction or Operation of the Proposed Water Conveyance Facility**

33 **NEPA Effects:** The generation and severity of odors is dependent on a number of factors, including
 34 the nature, frequency, and intensity of the source; wind direction; and the location of the
 35 receptor(s). Odors rarely cause physical harm, but can cause discomfort, leading to complaints to
 36 regulatory agencies.

37 Sources of odor during construction include diesel exhaust from construction equipment, asphalt
 38 paving, and excavated organic matter from the removal of RTM and sediment. All air districts in the
 39 Plan Area have adopted rules that limits the amount of ROG emissions from cutback asphalt (see
 40 Section 22.2.3). Accordingly, potential odors generated during asphalt paving would be addressed
 41 through mandatory compliance with air district rules (YSAQMD Rule 2.28, SMAQMD Rule 453,
 42 BAAQMD Regulation 8, Rule 15, SJVAPCD Rule 4641). Odors from equipment exhaust would be
 43 localized and generally confined to the immediate area surrounding the construction site. These
 44 odors would be temporary and localized, and they would cease once construction activities have

1 been completed. Thus, it is not anticipated that construction of CM1 would create objectionable
2 odors from construction equipment or asphalt paving.

3 Construction of the water conveyance facility would require removal of subsurface material during
4 tunnel excavation and sediment removal. Approximately 27 million cubic yards of saturated tunnel
5 RTM would result from tunnel boring activities. If present in the RTM and sediment, anaerobic
6 decay of organic material can generate gases, specifically hydrogen sulfide. Hydrogen sulfide is
7 commonly described as having a foul or “rotten egg” smell (Occupational Safety and Health
8 Administration 2005).

9 Geotechnical tests indicate that soils in the Plan Area have a high moisture content generally ranging
10 about 38 to 41 percent. Testing shows that soils in the Plan Area are predominately comprised of silt
11 and clay, with a variety of inorganic materials that are not anticipated to result in malodors. The
12 majority of test results for organic constituents and VOC were below the method detection limits,
13 indicating that organic decay of exposed RTM and sediment will be relatively low (URS 2014).
14 Moreover, drying and stockpiling of the removed RTM and sediment will occur under aerobic
15 conditions, which will further limit any potential decomposition and associated malodorous
16 products. Accordingly, it is not anticipated that tunnel and sediment excavation would create
17 objectionable odors.

18 Typical facilities known to produce odors include landfills, wastewater treatment plants, food
19 processing facilities, and certain agricultural activities. Alternative 4 would not result in the addition
20 of facilities associated with odors, and as such, long-term operation of the water conveyance facility
21 would not result in objectionable odors.

22 **CEQA Conclusion:** Alternative 4 would not result in the addition of major odor producing facilities.
23 Diesel emissions during construction could generate temporary odors, but these would quickly
24 dissipate and cease once construction is completed. Likewise, potential odors generated during
25 asphalt paving would be addressed through mandatory compliance with air district rules and
26 regulations. While tunnel excavation would unearth approximately 27 million cubic yards of RTM,
27 geotechnical tests indicate that soils in the Plan Area have relatively low organic constituents.
28 Moreover, drying and stockpiling of the removed RTM will occur under aerobic conditions, which
29 will further limit any potential decomposition and associated malodorous products. Accordingly, the
30 impact of exposure of sensitive receptors to potential odors would be less than significant. No
31 mitigation is required.

32 **Impact AQ-20: Generation of Criteria Pollutants in the Excess of Federal *De Minimis***
33 **Thresholds from Construction and Operation and Maintenance of the Proposed Water**
34 **Conveyance Facility**

35 **NEPA Effects:** EPA’s General Conformity Rule (40 CFR Parts 51 and 93) only applies to Federal
36 actions that are taken in EPA-designated “nonattainment” or “maintenance” areas. Accordingly, as
37 outlined in Section III.A of the General Conformity Rule, “only actions which cause emissions in
38 designated nonattainment and maintenance areas are subject to the regulations”. Criteria pollutant
39 emissions resulting from construction and operation of Alternative 4 in the SFNA, SJVAB, and
40 SFBAAB are presented in Table 22-110. Exceedances of the federal *de minimis* thresholds are shown
41 in underlined text.

1 **Sacramento Federal Nonattainment Area**

2 As shown in Table 22-110, implementation of Alternative 4 would exceed the following SFNA
3 federal *de minimis* thresholds:

- 4 • NO_x: 2019–2027

5 NO_x is a precursor to ozone and PM and NO_x is a precursor to PM, for which the SFNA is in
6 nonattainment for the NAAQS. Since project emissions exceed the federal *de minimis* threshold for
7 NO_x, a general conformity determination must be made to demonstrate that total direct and indirect
8 emissions of NO_x would conform to the appropriate SFNA SIPs for each year of construction in
9 which the *de minimis* thresholds are exceeded.

10 NO_x is also a precursor to PM and can contribute to PM formation. As discussed above, Sacramento
11 County is currently designated maintenance for the PM10 NAAQS and portions of the SVAB are
12 designated nonattainment for the PM2.5 NAAQS. NO_x emissions in excess of 100 tons per year in
13 Sacramento County trigger a secondary PM10 precursor threshold, whereas NO_x emissions in excess
14 of 100 tons per year in the SVAB trigger a secondary PM2.5 precursor threshold. Since NO_x
15 emissions can contribute to PM formation, NO_x emissions in excess of these secondary precursor
16 thresholds could conflict with the applicable PM10 and PM2.5 SIPs. Accordingly, NO_x offsets pursued
17 for the purposes of general conformity for those years in which NO_x emissions exceed 100 tons must
18 occur within the federally designated PM2.5 nonattainment and PM10 maintenance areas of the
19 SVAB.

20 As shown in Table 22-99, NO_x emissions generated by construction activities in SMAQMD
21 (Sacramento County) would not exceed 100 tons per year. Accordingly, the project does not trigger
22 the secondary PM10 precursor threshold. As shown in Table 22-110, NO_x emissions in 2025 would
23 exceed 100 tons year in the SFNA. The project therefore triggers the secondary PM2.5 precursor
24 threshold, requiring all NO_x offsets for 2025 to occur within the federally designated PM2.5
25 nonattainment area within the SFNA. The nonattainment boundary for PM2.5 includes all of
26 Sacramento County and portions of Yolo, El Dorado, Solano, and Placer counties.

27 A general conformity determination has been prepared for Alternative 4 and is included in Appendix
28 22E, *General Conformity Determination*. As shown in Appendix 22E, the federal lead agencies
29 (Reclamation, USFWS, and NMFS) demonstrate that project emissions would not result in a net
30 increase in regional NO_x emissions, as construction-related NO_x would be fully offset to zero through
31 implementation of Mitigation Measures AQ-1a and 1b, which require additional onsite mitigation
32 and/or offsets. Mitigation Measures AQ-1a and 1b will ensure the requirements of the mitigation
33 and offset program are implemented and conformity requirements for NO_x are met.

34 **Mitigation Measure AQ-1a: Mitigate and Offset Construction-Generated Criteria Pollutant**
35 **Emissions within the SFNA to Net Zero (0) for Emissions in Excess of General Conformity**
36 ***De Minimis* Thresholds (Where Applicable) and to Quantities below Applicable CEQA**
37 **Thresholds for Other Pollutants**

38 Please see Mitigation Measure AQ-1a under Impact AQ-1 in the discussion of Alternative 4.

39 **Mitigation Measure AQ-1b: Develop an Alternative or Complementary Offsite Mitigation**
40 **Program to Mitigate and Offset Construction-Generated Criteria Pollutant Emissions**
41 **within the SFNA to Net Zero (0) for Emissions in Excess of General Conformity *De Minimis***

1 **Thresholds (Where Applicable) and to Quantities below Applicable CEQA Thresholds for**
2 **Other Pollutants**

3 Please see Mitigation Measure AQ-1b under Impact AQ-1 in the discussion of Alternative 4.

1 **Table 22-110. Criteria Pollutant Emissions from Construction and Operation of Alternative 4 in**
 2 **Nonattainment and Maintenance Areas of the SFNA, SJVAB, and SFBAAB (tons/year)**

Year	Sacramento Federal Nonattainment Area					
	ROG	NO _x ^a	CO ^b	PM10 ^c	PM2.5	SO ₂
2016	<1	3	<1	<1	<1	<1
2017	<1	4	<1	1	1	<1
2018	1	9	1	9	3	<1
2019	5	<u>45</u>	1	21	5	<1
2020	6	<u>64</u>	1	30	5	<1
2021	10	<u>87</u>	3	40	7	<1
2022	11	<u>82</u>	3	40	7	1
2023	10	<u>73</u>	2	38	6	<1
2024	11	<u>83</u>	3	36	7	1
2025	14	<u>106^d</u>	6	41	8	1
2026	13	<u>90</u>	1	34	6	1
2027	11	<u>79</u>	<1	33	6	<1
2028	3	20	<1	19	3	<1
2029	3	19	<1	13	2	<1
ELT	0.13	0.80	1.65	0.27	0.08	<0.01
LLT	0.11	0.68	1.58	0.26	0.07	<0.01
<i>De Minimis</i>	25	25	100	100	100	100
Year	San Joaquin Valley Air Basin					
	ROG	NO _x ^a	CO ^b	PM10	PM2.5	SO ₂
2016	<1	4	0	<1	<1	<1
2017	1	5	0	1	1	<1
2018	3	<u>20</u>	0	9	3	<1
2019	6	<u>42</u>	0	27	5	<1
2020	<u>12</u>	<u>95</u>	4	48	7	2
2021	<u>14</u>	<u>104</u>	7	47	7	3
2022	<u>16</u>	<u>112</u>	13	47	8	6
2023	<u>14</u>	<u>92</u>	13	35	6	6
2024	<u>12</u>	<u>74</u>	13	24	5	6
2025	<u>10</u>	<u>62</u>	8	19	4	4
2026	6	<u>39</u>	0	15	2	<1
2027	4	<u>27</u>	0	14	2	<1
2028	2	<u>10</u>	0	7	1	<1
2029	0	0	0	0	0	0
ELT	0.01	0.08	0.14	0.02	0.01	0.00
LLT	0.01	0.07	0.13	0.02	0.01	0.00
<i>De Minimis</i>	10	10	100	100	100	100

Year	San Francisco Bay Area Air Basin					
	ROG	NO _x ^a	CO ^b	PM10 ^e	PM2.5	SO ₂
2016	<1	1	<1	-	<1	<1
2017	<1	1	<1	-	<1	<1
2018	3	20	1	-	2	<1
2019	2	19	0	-	2	<1
2020	5	46	17	-	5	7
2021	8	72	31	-	7	12
2022	10	98	49	-	9	19
2023	10	99	49	-	9	19
2024	15	<u>129</u>	49	-	11	20
2025	19	<u>148</u>	32	-	11	13
2026	10	67	2	-	6	1
2027	9	58	2	-	6	1
2028	6	40	1	-	4	1
2029	<1	1	<1	-	1	<1
ELT	0.19	1.15	2.42	-	0.11	0.01
LLT	0.16	0.97	2.33	-	0.10	0.01
<i>De Minimis</i>	<i>100</i>	<i>100</i>	<i>100</i>	<i>-</i>	<i>100</i>	<i>100</i>

^a NO_x emissions in excess of 100 tons per year within federally designated PM10 and PM2.5 nonattainment or maintenance areas trigger a secondary PM10 and PM2.5 precursor threshold. NO_x emissions in excess of this secondary threshold could conflict with the applicable PM10 and PM2.5 SIPs. Accordingly, NO_x offsets pursued for the purposes of general conformity for those years in which NO_x emissions exceed 100 tons must occur within the federally designated PM2.5 nonattainment and PM10 maintenance areas, as applicable.

^b The proposed water conveyance facility is located within a federally designated CO attainment area. Accordingly, CO emissions generated by construction of CM1 are not subject to the General Conformity Rule and are excluded from the emissions summary and general conformity analysis (40 CFR Part 51 and 93, Section III.A). Emissions presented in the table are limited those generated by haul trucks, which would occur in federally designated CO maintenance area.

^c There are no federally designated PM10 maintenance areas in Yolo County. Accordingly, PM10 emissions generated by construction of CM1 in Yolo County are not subject to the General Conformity Rule and are excluded from the emissions summary and general conformity analysis for the SFNA (40 CFR Part 51 and 93, Section III.A). Emissions presented in the table are limited those generated within Sacramento County.

^d 96.2 tons would be generated in SMAQMD and 9.7 tons would be generated in YSAQMD (see Table 22-99).

^e There are no federally designated PM10 nonattainment or maintenance areas in the SFBAAB. Accordingly, PM10 emissions generated by construction of CM1 are not subject to the General Conformity Rule and are excluded from the emissions summary and general conformity analysis (40 CFR Part 51 and 93, Section III.A).

1

2 **San Joaquin Valley Air Basin**

3 As shown in Table 22-110, implementation of Alternative 4 would exceed the following SJVAB
4 federal *de minimis* thresholds:

- 5 • ROG: 2020–2025

1 • NO_x: 2018–2028

2 ROG and NO_x are precursors to ozone and NO_x is a precursor to PM, for which the SJVAB is in
3 nonattainment for the NAAQS. Since project emissions exceed the federal *de minimis* threshold for
4 ROG and NO_x, a general conformity determination must be made to demonstrate that total direct
5 and indirect emissions of ROG and NO_x would conform to the appropriate SJVAB SIP for each year of
6 construction in which the *de minimis* thresholds are exceeded.

7 NO_x is also a precursor to PM and can contribute to PM formation. As discussed above, the SJVAB is
8 currently designated maintenance for the PM₁₀ NAAQS and nonattainment for the PM_{2.5} NAAQS.
9 NO_x emissions in excess of 100 tons per year trigger a secondary PM precursor threshold, and could
10 conflict with the applicable PM₁₀ and PM_{2.5} SIPs. As shown in Table 22-110, NO_x emissions
11 generated by construction activities in the SJVAB would exceed 100 tons per year between 2021 and
12 2022. NO_x offsets pursued for the purposes of general conformity for those years in which NO_x
13 emissions exceed 100 tons must occur within the federally designated PM_{2.5} nonattainment and
14 PM₁₀ maintenance areas of the SJVAB, which are consistent with the larger nonattainment
15 boundary for ozone.

16 A general conformity determination has been prepared for Alternative 4/4A and is included in
17 Appendix 22E, *General Conformity Determination*. As shown in Appendix 22E, the federal lead
18 agencies (Reclamation, USFWS, and NMFS) demonstrate that project emissions would not result in
19 an increase in regional ROG or NO_x emissions, as construction-related ROG and NO_x emissions
20 would be fully offset to zero through implementation of Mitigation Measures AQ-4a and AQ-4b,
21 which require additional onsite mitigation and/or offsets. Mitigation Measures AQ-4a and AQ-4b
22 will ensure the requirements of the mitigation and offset program are implemented and conformity
23 requirements for ROG and NO_x are met.

24 **Mitigation Measure AQ-4a: Mitigate and Offset Construction-Generated Criteria Pollutant**
25 **Emissions within SJVAPCD/SJVAB to Net Zero (0) for Emissions in Excess of General**
26 **Conformity *De Minimis* Thresholds (Where Applicable) and to Quantities below**
27 **Applicable SJVAPCD CEQA Thresholds for Other Pollutants**

28 Please see Mitigation Measure AQ-4a under Impact AQ-4 in the discussion of Alternative 4.

29 **Mitigation Measure AQ-4b: Develop an Alternative or Complementary Offsite Mitigation**
30 **Program to Mitigate and Offset Construction-Generated Criteria Pollutant Emissions**
31 **within the SJVAPCD/SJVAB to Net Zero (0) for Emissions in Excess of General Conformity**
32 ***De Minimis* Thresholds (Where Applicable) and to Quantities below Applicable SJVAPCD**
33 **CEQA Thresholds for Other Pollutants**

34 Please see Mitigation Measure AQ-4b under Impact AQ-4 in the discussion of Alternative 4.

35 ***San Francisco Bay Area Air Basin***

36 As shown in Table 22-110, implementation of Alternative 4 would exceed the following SFBAAB
37 federal *de minimis* thresholds:

38 • NO_x: 2024–2025

39 NO_x is a precursor to ozone and PM, for which the SFBAAB is in nonattainment for the NAAQS. Since
40 project emissions exceed the federal *de minimis* thresholds for NO_x, a general conformity

1 determination must be made to demonstrate that total direct and indirect emissions of NO_x would
 2 conform to the appropriate SFBAAB SIP for each year of construction in which the *de minimis*
 3 thresholds are exceeded.

4 A general conformity determination has been prepared for Alternative 4/4A and is included in
 5 Appendix 22E, *General Conformity Determination*. As shown in Appendix 22E, the federal lead
 6 agencies (Reclamation, USFWS, and NMFS) demonstrate that project emissions would not result in a
 7 net increase in regional NO_x emissions, as construction-related NO_x would be fully offset to zero
 8 through implementation of Mitigation Measures AQ-3a and 3b, which require additional onsite
 9 mitigation and/or offsets. Mitigation Measures AQ-3a and 3b will ensure the requirements of the
 10 mitigation and offset program are implemented and conformity requirements for NO_x are met.

11 **Mitigation Measure AQ-3a: Mitigate and Offset Construction-Generated Criteria Pollutant**
 12 **Emissions within BAAQMD/SFBAAB to Net Zero (0) for Emissions in Excess of General**
 13 **Conformity *De Minimis* Thresholds (Where Applicable) and to Quantities below**
 14 **Applicable BAAQMD CEQA Thresholds for Other Pollutants⁴⁸**

15 Please refer to Mitigation Measure AQ-3a under Impact AQ-3 in the discussion of Alternative 4.

16 **Mitigation Measure AQ-3b: Develop an Alternative or Complementary Offsite Mitigation**
 17 **Program to Mitigate and Offset Construction-Generated Criteria Pollutant Emissions**
 18 **within the BAAQMD/SFBAAB to Net Zero (0) for Emissions in Excess of General**
 19 **Conformity *De Minimis* Thresholds (Where Applicable) and to Quantities below**
 20 **Applicable BAAQMD CEQA Thresholds for Other Pollutants**

21 Please refer to Mitigation Measure AQ-3b under Impact AQ-3 in the discussion of Alternative 4.

22 **CEQA Conclusion:** SFNA, SJVAB, and SFBAAB are classified as nonattainment areas with regard to
 23 the ozone NAAQS and the impact of increases in criteria pollutant emissions above the air basin *de*
 24 *minimis* thresholds could conflict with or obstruct implementation of the applicable air quality plans.
 25 Since construction emissions in the SFNA, SJVAB, and SFBAAB would exceed the *de minimis*
 26 thresholds for ROG (SJVAB only) and NO_x, this impact would be significant. Mitigation Measures AQ-
 27 1a, AQ-1b, AQ-3a, AQ-3b, AQ-4a, and AQ-4b would ensure project emissions would not result in an
 28 increase in regional ROG (SJVAB only) or NO_x emissions. These measures would therefore ensure
 29 total direct and indirect ROG (SJVAB only) and NO_x emissions generated by the project would
 30 conform to the appropriate air basin SIPs by offsetting the action's emissions in the same or nearby
 31 area to net zero.

32 **Impact AQ-21: Generation of Cumulative Greenhouse Gas Emissions during Construction of**
 33 **the Proposed Water Conveyance Facility**

34 **NEPA Effects:** GHG (CO₂, CH₄, N₂O, SF₆, and HFCs) emissions resulting from construction of
 35 Alternative 4 are presented in Table 22-111. Emissions with are presented with implementation of
 36 environmental commitments (see Appendix 3B, *Environmental Commitments*) and state mandates to
 37 reduce GHG emissions. State mandates include the RPS, LCFS, and Pavley. These mandates do not

⁴⁸ In the title of this mitigation measure, the phrase "for other pollutants" is intended to apply to other alternatives, where associated impacts to other pollutants may exceed thresholds other than NO_x.

1 require additional action on the part of DWR, but will contribute to GHG emissions reductions. For
 2 example, Pavley and LCFS will improve the fuel efficiency of vehicles and reduce the carbon content
 3 of transportation fuels, respectively. Equipment used to construct the project will therefore be
 4 cleaner and less GHG intensive than if the state mandates had not been established. Due to the global
 5 nature of GHGs, the determination of effects is based on total emissions generated by construction
 6 (Table 22-111).

7 **Table 22-111. GHG Emissions from Construction of Alternative 4 (metric tons/year)^a**

Year	Equipment and Vehicles (CO ₂ e)	Electricity (CO ₂ e)	Concrete Batching (CO ₂)	Total CO ₂ e
2016	2,014	0	0	2,014
2017	2,694	0	0	2,694
2018	19,097	1,265	1,173	21,535
2019	37,147	4,602	43,117	84,866
2020	63,992	26,387	82,627	173,006
2021	95,552	69,249	184,947	349,748
2022	109,560	96,611	352,630	558,800
2023	102,228	85,979	330,407	518,614
2024	111,807	89,036	316,078	516,921
2025	123,701	60,880	284,149	468,731
2026	69,941	22,431	31,677	124,049
2027	56,504	5,083	74,130	135,717
2028	29,548	1,007	20,646	51,202
2029	8,014	5	3,497	11,516
<i>Total</i>	<i>831,799</i>	<i>462,535</i>	<i>1,725,078</i>	<i>3,019,413</i>

^a Emissions estimates do not account for GHG flux from land disturbance. Surface and subsurface (e.g., tunneling) activities may oxidize peat soils, releasing GHG emissions. However, recent geotechnical surveys indicated that peat is negligible below 80 feet of depth. The tunnel will be placed below this range and the design adjusted if peat soils are discovered. Peat material encountered during surface excavation for non-tunnel work will be covered with top soil to reduce oxidation when needed.

Values may not total correctly due to rounding.

8

9 Table 22-112 summarizes GHG emissions that would be generated in the BAAQMD, SMAQMD,
 10 SJVAPCD, and YSAQMD. The table does not include emissions from electricity generation as these
 11 emissions would be generated by power plants located throughout the state (see discussion
 12 preceding this impact analysis). GHG emissions presented in Table 22-112 are therefore provided
 13 for information purposes only.

1 **Table 22-112. GHG Emissions from Construction of Alternative 4 by Air District (metric tons/year)^a**

Air District	Equipment and Vehicles (CO ₂ e)	Concrete Batching (CO ₂) ^a	Total CO ₂ e ^b
SMAQMD	257,364	152,657	410,022
YSAQMD	21,964	0	21,964
SJVAPCD	243,958	486,857	730,815
BAAQMD	308,513	1,085,564	1,394,077

^a Emissions assigned to each air district based on the number of batching plants located in that air district.
^b Values may not total correctly due to rounding.

2

3 Construction of Alternative 4 would generate a total of 3.0 million metric tons of GHG emissions
4 after implementation of environmental commitments and state mandates. This is equivalent to
5 adding 633,000 typical passenger vehicles to the road during construction (U.S. Environmental
6 Protection Agency 2014e). As discussed in section 22.3.2, *Determination of Effects*, any increase in
7 emissions above net zero associated with construction of the BDCP water conveyance features
8 would be adverse. Accordingly, this effect would be adverse. Mitigation Measure AQ-21, which
9 would develop a GHG Mitigation Program to reduce construction-related GHG emissions to net zero,
10 is available address this effect. Please refer to Appendix 22A, *Air Quality Analysis Methodology*, for a
11 summary of assumptions used to estimate potential GHG reductions associated with each strategy.

12 **CEQA Conclusion:** Construction of Alternative 4 would generate a total of 3.0 million metric tons of
13 GHG emissions. This is equivalent to adding 633,000 typical passenger vehicles to the road during
14 construction (U.S. Environmental Protection Agency 2014e). As discussed in section 22.3.2,
15 *Determination of Effects*, any increase in emissions above net zero associated with construction of
16 the BDCP water conveyance features would be significant. Mitigation Measure AQ-21 would develop
17 a GHG Mitigation Program to reduce construction-related GHG emissions to net zero. Accordingly,
18 this impact would be less-than-significant with implementation of Mitigation Measure AQ-21.

19 **Mitigation Measure AQ-21: Develop and Implement a GHG Mitigation Program to Reduce**
20 **Construction Related GHG Emissions to Net Zero (0)**

21 BDCP proponents will develop a GHG Mitigation Program prior to the commencement of any
22 construction or other physical activities associated with CM1 that would generate GHG
23 emissions. The GHG Mitigation Program will consist of feasible options that, taken together, will
24 reduce construction-related GHG emissions to net zero (0) (i.e., emissions will be reduced to the
25 maximum extent feasible and any remaining emissions from the project will be offset elsewhere
26 by emissions reductions of equal amount). The BDCP proponents will determine the nature and
27 form of the components of the GHG Mitigation Program after consultation with the following
28 agencies, as applicable: (i) Study area air districts (BAAQMD, SMAQMD, SJVPACD, and YSAQMD),
29 (ii) California Air Resources Board, (iii) U.S. Environmental Protection Agency, and (iv)
30 California Energy Commission.

31 Specific strategies that could be used in formulating the GHG Mitigation Program are
32 summarized below. The identified strategies will produce GHG reductions across a broad range
33 of emissions sectors throughout the state. The strategies are divided into seven categories based
34 on their application. Potential GHG emissions reductions that could be achieved by each
35 measure are identified. It is theoretically possible that many of the strategies discussed below
36 could independently achieve a net-zero GHG footprint for BDCP construction activities. Various

1 combinations of measure strategies could also be pursued to optimize total costs or community
 2 co-benefits. The BDCP proponents shall be responsible for determining the overall mix of
 3 strategies necessary to ensure the performance standard to mitigate the adverse GHG
 4 construction impacts is met.

5 BDCP proponents will develop a mechanism for quantifying, funding, implementing, and
 6 verifying emissions reductions associated with the selected strategies. BDCP proponents will
 7 also conduct annual reporting to verify and document that selected strategies achieve sufficient
 8 emissions reductions to offset construction-related emissions to net zero. All selected strategies
 9 must be quantifiable, verifiable, enforceable, and satisfy the basic criterion of additionally (i.e.,
 10 the reductions would not happen without the financial support of purchased offset credits or
 11 other mitigation strategies). Annual reports will include, at a minimum the following
 12 components.

- 13 • Calculated or measured emissions from construction activities over the reporting year.
- 14 • Projects selected for funding during the reporting year.
- 15 • Total funds distributed to selected projects during the reporting year.
- 16 • Cumulative funds distributed since program inception.
- 17 • Emissions reductions achieved during the reporting year.
- 18 • Cumulative reductions since program inception.
- 19 • Total emissions reductions remaining to satisfy the requirements of Mitigation Measure AQ-
 20 21.

21 **GHG Emissions Reduction Strategies to Consider in Formulating a GHG Mitigation Program**

22 This section summarizes GHG reduction strategies that will be considered in formulating a GHG
 23 mitigation program. Quantitative information on the potential capacity of each strategy is
 24 provided in Appendix 22A, *Air Quality Analysis Methods*. These estimates are based on general
 25 construction activity information, the size and trading volume of existing carbon offset markets,
 26 and available alternative energy resources (e.g., biomass, renewable energy) available to the
 27 project as potential mitigation strategies. Emissions reductions quantified for each strategy
 28 should be seen as high-level screening values that illustrate a rough order of magnitude for the
 29 expected level of emissions reductions or offsets. Moreover, the mitigation strategies should be
 30 viewed not as individual strategies, but rather as a suite of strategies. If one strategy, when
 31 investigated in greater detail prior to implementation, cannot deliver as high a level of emissions
 32 reduction or offset as initially estimated, other strategies will be implemented to ensure
 33 achievement of the performance standard of zero net GHG emissions from the project.

34 ***Renewable Energy Purchase Agreement***

- 35 • **Strategy-1: Renewable Energy Purchase Agreement:** Enter into a power purchase
 36 agreement, where feasible, with utilities which provide electricity service within the Study
 37 area to purchase construction electricity from renewable sources. Renewable sources must
 38 be zero emissions energy sources (e.g., wind, solar, hydro) and may not be accounted to
 39 utility RPS goals.

Additional Onsite Mitigation

- **Strategy-2: Engine Electrification:** DWR has identified all feasible electrification requirements as environmental commitments. It is anticipated that additional technology will be available by the time construction starts that will enable further electrification. This strategy would take advantage of new technologies as they become available and will engage the maximum level of engine electrification feasible for onsite heavy-duty equipment.
- **Strategy-3: Low Carbon Concrete:** Require concrete components to be constructed out of concrete with up to 70% replacement of cement with SCM with lower embodied energy and associated GHG emissions.⁴⁹ Implementation of this strategy would require structural testing to ensure the concrete meet required strategy strength, durability, workability, and rigidity standards. If new materials with lower embodied energy or superior workability are developed between the writing of this measure and project commencement, the BDCP proponents will investigate use of those materials in place of SCM.
- **Strategy-4: Renewable Diesel and/or Bio-diesel:** Require use of renewable diesel sometimes also called “green diesel” and or bio-diesel fuels for operation of all diesel equipment. If new technologies or fuels with lower emissions rates are developed between the writing of this measure and project commencement, those advanced technologies or fuels could be incorporated into this measure.

Energy Efficiency Retrofits and Rooftop Renewable Energy

- **Strategy-5: Residential Energy Efficiency Improvements:** Develop a residential energy retrofit package in conjunction with local utility providers to achieve reductions in natural gas and electricity usage. The retrofit package should include, at a minimum, the following improvements.
 - Replacement of interior high use incandescent lamps with CFLs or LED.
 - Installation of programmable thermostats.
 - Replacement of windows with double-pane or triple-pane solar-control low-E argon gas filled wood frame windows.
 - Identification and sealing of dust and air leaks.
 - Replacement of electric clothes dryers with natural gas dryers.
 - Replacement of natural gas furnaces with Energy Star labeled models.
 - Installation of insulation.

This measure is inherently scalable (i.e., the total number of houses retrofit is likely limited by funds rather than the availability of housing stock).

⁴⁹ SCM are often incorporated in concrete mix to reduce cement contents, improve workability, increase strength, and enhance durability. Although SCM can improve the strength of resulting structures, proper testing is required ensure the cement meets technical specifications for strength and rigidity.

- 1 • **Strategy-6: Commercial Energy Efficiency Improvements:** Develop a commercial energy
2 retrocommissioning package in conjunction with local utility providers to improve building-
3 wide energy efficiency by at least 15%, relative to current energy consumption levels. This
4 measure is inherently scalable.
- 5 • **Strategy-7: Residential Rooftop Solar:** Develop a residential rooftop solar installation
6 program in conjunction with local utility providers. The installation program will allow
7 homeowners to install solar photovoltaic systems at zero or minimal up-front cost. All
8 projects installed under this measure must be designed for high performance (e.g., optimal
9 full-sun location, solar orientation) and additive to utility RPS goals. This measure is
10 inherently scalable.
- 11 • **Strategy-8: Commercial Rooftop Solar:** Develop a commercial rooftop solar installation
12 program in conjunction with local utility providers. The installation program will allow
13 business owners to install solar photovoltaic systems at zero or minimal up-front cost. All
14 projects installed under this measure must be designed for high performance (e.g., optimal
15 full-sun location, solar orientation) and additive to utility RPS goals. This measure is
16 inherently scalable.

17 ***Carbon Offsets***

- 18 • **Strategy-9: Purchase Carbon Offsets:** In partnership with offset providers, purchase
19 carbon offsets. Offset protocols and validation could tier off existing standards (e.g., Climate
20 Registry Programs) or could be developed independently, provided such protocols satisfy
21 basic criterion of additionally (i.e., the reductions would not happen without the financial
22 support of purchased offset credits). ARB has established a Cap and Trade registry that
23 identifies qualified providers and AB 32 projects. It is estimated that between 2012 and
24 2020, 2.5 billion allowances will be made available within the state (Legislative Analyst's
25 Office 2012). The national and international carbon markets are likely greater. Potential
26 offset programs could include the following.
- 27 ○ AB 32 U.S. Forest and Urban Forest Project Resources
- 28 ○ AB 32 Livestock Projects
- 29 ○ AB 32 Ozone Depleting Substances Projects
- 30 ○ AB 32 Urban Forest Projects
- 31 ○ Other-California Based Offsets
- 32 ○ United States Based Offsets
- 33 ○ International Offsets (e.g., clean development mechanisms)

34 This measure is inherently scalable based on the volume of offsets purchased.

35 ***Biomass Digestion and Conversion***

- 36 • **Strategy-10: Development of Biomass Waste Digestion and Conversion Facilities:**
37 Provide financing for facility development either through long term power purchase
38 agreements or up front project financing. Projects will be awarded based on competitive
39 bidding process and chosen for GHG sequestration and other environmental benefits to
40 project area. Projects will provide a range of final products: electricity generation,
41 Compressed Natural Gas for transportation fuels, and pipeline quality biomethane.

- 1 • **Strategy-11: Agriculture Waste Conversion Development:** Fund the re-commissioning of
2 thermal chemical conversion facilities to process collected agricultural biomass residues.
3 Project funding will include better resource modeling and provide incentives to farmers in
4 the project area to deliver agricultural wastes to existing facilities.

5 ***Increase Renewable Energy Purchases to Operate the State Water Project***

- 6 • **Strategy-12: Temporarily Increase Renewable Energy Purchases for Operations:**
7 Temporarily increase renewable energy purchases under the Renewable Energy
8 Procurement Plan to offset BDCP construction emissions. DWR as part of its CAP is
9 implementing a Renewable Energy Procurement Plan. This plan identifies the quantity of
10 additional renewable electricity resources that DWR will purchase in each year between
11 2010 and 2050 to achieve the GHG emissions reduction goals laid out in the CAP.

12 ***Land Use Change and Sequestration***

- 13 • **Strategy-13: Tidal Wetland Inundation:** Expand the number of subsidence reversal and/or
14 carbon sequestration projects currently being undertaken by DWR on Sherman and
15 Twitchell Islands. Existing research at the Twitchell Wetlands Research Facility
16 demonstrates that wetland restoration can sequester 25 tons of carbon per acre per year.
17 Measure funding could be used to finance permanent wetlands for waterfowl or rice
18 cultivation, creating co-benefits for wildlife and local farmers.

19 **Impact AQ-22: Generation of Cumulative Greenhouse Gas Emissions from Operation and**
20 **Maintenance of the Proposed Water Conveyance Facility and Increased Pumping**

21 ***NEPA Effects:*** Operation of Alternative 4 would generate direct and indirect GHG emissions. Sources
22 of direct emissions include heavy-duty equipment, on road crew trucks, and employee vehicle
23 traffic. Indirect emissions would be generated predominantly by electricity consumption required
24 for pumping as well as, maintenance, lighting, and other activities.

25 Table 22-113 summarizes long-term operational GHG emissions associated with operations,
26 maintenance, and increased SWP pumping. Emissions were quantified for both ELT and LLT
27 conditions, although activities would take place annually until project decommissioning. Emissions
28 include state mandates to reduce GHG emissions (described in Impact AQ-21) are presented (there
29 are no BDCP specific operational environmental commitments). Total CO₂e emissions are compared
30 to both the No Action Alternative (NEPA point of comparison) and Existing Conditions (CEQA
31 baseline). As discussed in Section 22.3.1.2, equipment emissions are assumed to be zero under both
32 the No Action Alternative (NEPA point of comparison) and Existing Conditions (CEQA baseline). The
33 equipment emissions presented in Table 22-113 are therefore representative of project impacts for
34 both the NEPA and CEQA analysis.
35

1 **Table 22-113. GHG Emissions from Operation, Maintenance, and Increased SWP Pumping, Alternative 4 (Scenarios H1 through H4) (metric**
 2 **tons/year)**

Condition	Equipment CO ₂ e	NEPA Point of Comparison (Electricity CO ₂ e)				CEQA Baseline (Electricity CO ₂ e)				NEPA Point of Comparison (Total CO ₂ e)				CEQA Baseline (Total CO ₂ e)			
		H1	H2	H3	H4	H1	H2	H3	H4	H1	H2	H3	H4	H1	H2	H3	H4
ELT	815	-	-	-	-	112,740	-3,887	51,457	-46,611	-	-	-	-	113,555	-3,071	52,272	-45,796
LLT	791	28,697	11,992	19,086	2,795	7,121	-10,521	-2,489	-22,533	29,488	12,783	19,878	3,586	7,913	-9,730	-1,698	-21,742

Note: The *NEPA point of comparison* compares total CO₂e emissions after implementation of Alternative 4 to the No Action Alternative, whereas the *CEQA baseline* compares total CO₂e emissions to Existing Conditions.

3

1 Table 22-114 summarizes equipment CO₂e emissions that would be generated in the BAAQMD,
 2 SMAQMD, and SJVAPCD (no operational emissions would be generated in the YSAQMD) under
 3 Scenarios H1 through H4. The table does not include emissions from SWP pumping as these
 4 emissions would be generated by power plants located throughout the state (see discussion
 5 preceding this impact analysis). GHG emissions presented in Table 22-114 are therefore provided
 6 for information purposes only.

7 **Table 22-114. Equipment CO₂e Emissions from Operation and Maintenance of Alternative 4**
 8 **(Scenarios H1 through H4) by Air District (metric tons/year)**

Air District	ELT	LLT
SMAQMD	319	311
SJVAPCD	36	36
BAAQMD	460	445
Total	815	791

^a Emissions do not include emissions generated by increased SWP pumping.

9 ***SWP Operational and Maintenance GHG Emissions Analysis***

10 ***SWP Operational and Maintenance GHG Emissions Analysis***
 11 SWP operational emissions with implementation of Alternative 4 would vary depending on the
 12 outcome of the decision tree process. Because Scenario H1 represents the largest potential increase
 13 in SWP electricity demand (of the four possible outcomes) this analysis evaluates Scenario H1. Note
 14 that Scenario H4 would result in a decrease in SWP electricity demand, and thus would result in no
 15 impact or a positive impact on SWP operational GHG emissions.

16 Alternative 4 would add a maximum of 1,405 GWh⁵⁰ of additional net electricity demand to
 17 operation of the SWP each year assuming 2060 (LLT) conditions. Conditions at 2060 are used for
 18 this analysis because they yield the largest potential additional net electricity requirements and
 19 therefore represent the largest potential impact. This 1,405 GWh is based on assumptions of future
 20 conditions and operations and includes all additional energy required to operate the project with
 21 BDCP Alternative 4 including any additional energy associated with additional water being moved
 22 through the system.

23 In the CAP, DWR developed estimates of historical, current, and future GHG emissions. Figure 22-17
 24 shows those emissions as they were projected in the CAP and how those emissions projections
 25 would change with the additional electricity demands needed to operate the SWP with the addition
 26 of BDCP Alternative 4. As shown in Figure 22-17, in 2024, the year BDCP Alternative 4 is projected
 27 to go online, DWR total emissions jump from around 912,000 metric tons of CO₂e to around 1.5
 28 million metric tons of CO₂e. This elevated level is approximately 260,000 metric tons of CO₂e above
 29 DWR's designated GHG emissions reduction trajectory (red line, which is the linear interpolation
 30 between DWR's 2020 GHG emissions goal and DWR's 2050 GHG emissions goal.) The projection
 31 indicates that after the initial jump in emissions, existing GHG emissions reduction measures would

⁵⁰ Estimated net energy demand differs slightly from what is presented in Chapter 21, *Energy*. This is because the above analysis includes energy needed for transmission and distribution of water along the Valley String, which is required to enable a comparison with the assumptions in DWR's CAP.

bring the elevated GHG emissions level back down below DWR's GHG emissions reduction trajectory by 2041 and that DWR would still achieve its GHG emission reduction goal by 2050.

Because employing only DWR's existing GHG emissions reduction measures would result in a large initial increase in emissions and result in DWR emissions exceeding the emissions reduction trajectory for several years, DWR will take additional actions to reduce GHG emissions if BDCP Alternative 4 is implemented.

The CAP sets forth DWR's plan to manage its activities and operations to achieve its GHG emissions reduction goals. The CAP commits DWR to monitoring its emissions each year and evaluating its emissions every five years to determine whether it is on a trajectory to achieve its GHG emissions reduction goals. If it appears that DWR will not meet the GHG emission reduction goals established in the plan, DWR may make adjustments to existing emissions reduction measures, devise new measures to ensure achievement of the goals, or take other action. Given the scale of additional emissions that BDCP Alternative 4 would add to DWR's total GHG emissions, DWR has evaluated the most likely method that it would use to compensate for such an increase in GHG emissions: modification of DWR's REPP. The DWR REPP (GHG emissions reduction measure OP-1 in the CAP) describes the amount of additional renewable energy that DWR expects to purchase each year to meet its GHG emissions reduction goals. The REPP lays out a long-term strategy for renewable energy purchases, though actual purchases of renewable energy may not exactly follow the schedule in the REPP and will ultimately be governed by actual operations, measured emissions, and contracting.

Table 22-115 below shows how the REPP could be modified to accommodate BDCP Alternative 4, and shows that additional renewable energy resources could be purchased during years 2022–2025 over what was programmed in the original REPP. The net result of this change is that by 2026 DWR's energy portfolio would contain nearly 1,405 GWh of renewable energy (in addition to hydropower generated at SWP facilities). This amount is considerably larger than the amount called for in the original DWR REPP (1,393 compared to 792). In later years, 2031–2050, DWR would bring on slightly fewer additional renewable resources than programmed in the original REPP. Figure 22-18 shows how this modified REPP would affect DWR's projected future emissions with BDCP Alternative 4.

Table 22-115. Changes in Expected Renewable Energy Purchases 2011–2050 (Alternative 4)

Year(s)	Additional GWh of Renewable Power Purchased (Above previous year)	
	Original CAP	New CAP
2011–2020	36	36
2021	72	72
2022–2025	72	222
2026–2030	72	72
2031–2040	108	53
2041–2050	144	74
Total Cumulative	52,236	57,011

As shown in the analysis above and consistent with the analysis contained in the CAP and associated Initial Study and Negative Declaration for the CAP, BDCP Alternative 4 would not adversely affect DWR's ability to achieve the GHG emissions reduction goals set forth in the CAP. Further, Alternative

1 4 would not conflict with any of DWR's specific action GHG emissions reduction measures and
 2 implements all applicable project level GHG emissions reduction measures as set forth in the CAP.
 3 BDCP Alternative 4 is therefore consistent with the analysis performed in the CAP. There would be
 4 no adverse effect.

5 **CEQA Conclusion:** SWP GHG emissions currently are below 1990 levels and achievement of the
 6 goals of the CAP means that total DWR GHG emissions will be reduced to 50% of 1990 levels by
 7 2020 and to 80% of 1990 levels by 2050. The implementation of BDCP Alternative 4 would not
 8 affect DWR's established emissions reduction goals or baseline (1990) emissions and therefore
 9 would not result in a change in total DWR emissions that would be considered significant. Prior
 10 adoption of the CAP by DWR already provides a commitment on the part of DWR to make all
 11 necessary modifications to DWR's REPP (as described above) or any other GHG emission reduction
 12 measure in the CAP that are necessary to achieve DWR's GHG emissions reduction goals. Therefore
 13 no amendment to the approved CAP is necessary to ensure the occurrence of the additional GHG
 14 emissions reduction activities needed to account for BDCP-related operational emissions. The effect
 15 of BDCP Alternative 4 with respect to GHG emissions is less than cumulatively considerable and
 16 therefore less than significant. No mitigation is required.

17 **Impact AQ-23: Generation of Cumulative Greenhouse Gas Emissions from Increased CVP**
 18 **Pumping as a Result of Implementation of CM1**

19 **NEPA Effects:** As previously discussed, DWR's CAP cannot be used to evaluate environmental
 20 impacts associated with increased CVP pumping, as emissions associated with CVP are not under
 21 DWR's control and are not included in the CAP. Accordingly, GHG emissions resulting from increased
 22 CVP energy use are evaluated separately from GHG emissions generated as a result of SWP energy
 23 use.

24 Under Alternative 4, operation of the CVP yields the generation of clean, GHG emissions-free,
 25 hydroelectric energy. This electricity is sold into the California electricity market or directly to
 26 energy users. Analysis of the No Action Alternative indicates that the CVP generates and will
 27 continue to generate all of the electricity needed to operate the CVP system and approximately
 28 3,500 GWh of excess hydroelectric energy that would be sold to energy users throughout California.
 29 Implementation of Alternative 4, however, could result in an increase of up to 134⁵¹ GWh in the
 30 demand for CVP generated electricity, which would result in a reduction of 134 GWh or electricity
 31 available for sale from the CVP to electricity users. This reduction in the supply of GHG emissions-
 32 free electricity to the California electricity users could result in a potential indirect effect of the
 33 project, as these electricity users would have to acquire substitute electricity supplies that may
 34 result in GHG emissions (although additional conservation is also a possible outcome as well).

35 It is unknown what type of power source (e.g., renewable, natural gas) would be substituted for CVP
 36 electricity or if some of the lost power would be made up with higher efficiency. Given State
 37 mandates for renewable energy and incentives for energy efficiency, it is possible that a

⁵¹ SWP operational emissions with implementation of Alternative 4 would vary depending on the outcome of the decision tree process. Because Scenario H1 represents the largest potential decrease in excess generating capacity for the CVP (of the four possible outcomes) this analysis evaluates Scenario H1. Note that Scenario H4 would result in an increase in excess CVP generating capacity, and thus would result in no impact or a positive impact on statewide GHG emissions.

1 considerable amount of this power would be replaced by renewable resources or would cease to be
 2 needed as a result of higher efficiency. However, to ensure a conservative analysis, indirect
 3 emissions were quantified for the entire quantity of electricity (134 GWh) using the current and
 4 future statewide energy mix (adjusted to reflect RPS) (please refer to Appendix 22A, *Air Quality*
 5 *Analysis Methodology* for additional detail on quantification methods).

6 Substitution of 134 GWh of electricity with a mix of sources similar to the current statewide mix
 7 would result in emissions of 37,476 metric tons of CO₂e; however, under expected future conditions
 8 (after full implementation of the RPS), emissions would be 29,121 metric tons of CO₂e.

9 Use of CVP hydroelectricity to meet increased electricity demand from operation of CVP facilities
 10 associated with Alternative 4 would reduce available CVP hydroelectricity to other California
 11 electricity users. Substitution of the lost electricity with electricity from other sources could
 12 indirectly result in an increase of GHG emissions that is comparable or larger than the level of GHG
 13 emissions that trigger mandatory GHG reporting for major facilities. As a result, these emissions
 14 could contribute to a cumulatively considerable effect and are therefore adverse. However, these
 15 emissions would be caused by dozens of independent electricity users, who had previously bought
 16 CVP power, making decisions about different ways to substitute for the lost power. These decisions
 17 are beyond the control of Reclamation or any of the other BDCP Lead Agencies. Further, monitoring
 18 to determine the actual indirect change in emissions as a result of BDCP actions would not be
 19 feasible. In light of the impossibility of predicting where any additional emissions would occur, as
 20 well as Reclamation's lack of regulatory authority over the purchasers of power in the open market,
 21 no workable mitigation is available or feasible.

22 **CEQA Conclusion:** Operation of the CVP is a federal activity beyond the control of any State agency
 23 such as DWR, and the power purchases by private entities or public utilities in the private
 24 marketplace necessitated by a reduction in available CVP-generated hydroelectric power are beyond
 25 the control of the State, just as they are beyond the control of Reclamation. For these reasons, there
 26 are no feasible mitigation measures that could reduce this potentially significant indirect impact,
 27 which is solely attributable to operations of the CVP and not the SWP, to a less than significant level.
 28 This impact is therefore determined to be significant and unavoidable.

29 **Impact AQ-24: Generation of Regional Criteria Pollutants from Implementation of CM2–CM11**

30 **NEPA Effects:** Implementation of the CM2–CM11 could generate additional traffic on roads and
 31 highways in and around Suisun Marsh and the Yolo Bypass related to restoration or monitoring
 32 activities. Habitat restoration and enhancement activities that require physical changes or heavy-
 33 duty equipment would generate construction emissions through earthmoving activities and heavy-
 34 duty diesel-powered equipment. Habitat restoration and enhancement conservation measures are
 35 anticipated to include a number of activities generating traffic to transport material and workers to
 36 and from the construction sites, including the following.

- 37 ● Grading, excavating, and placing fill material.
- 38 ● Breaching, modifying, or removing existing levees and constructing new levees.
- 39 ● Modifying, demolishing, and removing existing infrastructure (e.g., buildings, roads, fences,
 40 electric transmission and gas lines, irrigation infrastructure).
- 41 ● Constructing new infrastructure (e.g., buildings, roads, fences, electric transmission and gas
 42 lines, irrigation infrastructure).

1 Operational emissions associated with CM2–CM11 would primarily result from vehicle trips for site
 2 inspections, monitoring, and routine maintenance. The intensity and frequency of vehicle trips
 3 associated with routine maintenance are assumed to be relatively minor. Because the specific areas
 4 and process for implementing CM2–CM11 has not been determined, this effect is evaluated
 5 qualitatively.

6 Table 22-29 summarizes potential construction and operational emissions that may be generated by
 7 implementation of CM2–CM11. Activities with the greatest potential to have short or long-term air
 8 quality effects are denoted with an asterisk (*).

9 CM2–CM11 restoration activities would occur in all air districts. Construction and operational
 10 emissions associated with the restoration and enhancement actions under Alternative 4 could
 11 potentially exceed applicable general conformity *de minimis* levels listed in Table 22-9 and
 12 applicable local thresholds listed in Table 22-8. The effect would vary according to the equipment
 13 used in construction of a specific conservation measure, the location, the timing of the actions called
 14 for in the conservation measure, and the air quality conditions at the time of implementation; these
 15 effects would be evaluated and identified in the subsequent project-level environmental analysis
 16 conducted for the CM2–CM11 restoration and enhancement actions. The effect of increases in
 17 emissions during implementation of CM2–CM11 in excess of applicable general conformity *de*
 18 *minimis* levels and air district regional thresholds (Table 22-8) could violate air basin SIPs and
 19 worsen existing air quality conditions. Mitigation Measure AQ-24 would be available to reduce this
 20 effect, but emissions would still be adverse.

21 **CEQA Conclusion:** Construction and operational emissions associated with the restoration and
 22 enhancement actions would result in a significant impact if the incremental difference, or increase,
 23 relative to Existing Conditions exceeds the applicable local air district thresholds shown in Table 22-
 24 8; these effects are expected to be further evaluated and identified in the subsequent project-level
 25 environmental analysis conducted for the CM2–CM11 restoration and enhancement actions.
 26 Mitigation Measure AQ-24 would be available to reduce this effect, but may not be sufficient to
 27 reduce emissions below applicable air quality management district thresholds (see Table 22-8).
 28 Consequently, this impact would be significant and unavoidable.

29 **Mitigation Measure AQ-24: Develop an Air Quality Mitigation Plan (AQMP) to Ensure Air**
 30 **District Regulations and Recommended Mitigation are Incorporated into Future**
 31 **Conservation Measures and Associated Project Activities**

32 BDCP proponents will develop an AQMP prior to the commencement of any construction,
 33 operational, or other physical activities associated with CM2–CM11 that would involve adverse
 34 effects to air quality. The AQMP will be incorporated into the site-specific environmental review
 35 for all conservation measures or project activities. BDCP proponents will ensure that the
 36 following measures are implemented to reduce local and regional air quality impacts. Not all
 37 measures listed below may be feasible or applicable to each conservation measure. Rather, these
 38 measures serve as an overlying mitigation framework to be used for specific conservation
 39 measures. The applicability of measures listed below may also vary based on the lead agency,
 40 location, timing, available technology, and nature of each conservation measure.

- 41 ● Implement basic and enhanced dust control measures recommended by local air districts in
 42 the project-area. Applicable control measures may include, but are not limited to, watering
 43 exposed surfaces, suspended project activities during high winds, and planting vegetation
 44 cover in disturbed areas.

- 1 • Require construction equipment be kept in proper working condition according to
2 manufacturer's specifications.
- 3 • Ensure emissions from all off-road diesel-powered equipment used to construct the project
4 do not exceed applicable air district rules and regulations (e.g., nuisance rules, opacity
5 restrictions).
- 6 • Reduce idling time by either shutting equipment off when not in use or limiting the time of
7 idling to less than required by the current statewide idling restriction.
- 8 • Reduce criteria pollutant exhaust emissions by requiring the latest emissions control
9 technologies. Applicable control measures may include, but are not limited to, engine
10 retrofits, alternative fuels, electrification, and add-on technologies (e.g., DPF).
- 11 • Undertake in good faith an effort to enter into a development mitigation contract with the
12 local air district to offset criteria pollutant emissions below applicable air district thresholds
13 through the payment of mitigation fees.

14 Implementation of this measure will reduce criteria pollutant emissions generated by
15 construction, operational, or other physical activities associated with CM2–CM11. The
16 applicability of measures listed above may vary based on the lead agency, location, timing,
17 available technology, and nature of each conservation measure. If the above measures do not
18 contribute to emissions reductions, guidelines will be developed to ensure that criteria
19 pollutants generated during construction and project operations are reduced to the maximum
20 extent practicable.

21 **Impact AQ-25: Exposure of Sensitive Receptors to Health Hazards from Localized Particulate**
22 **Matter, Carbon Monoxide, and Diesel Particulate Matter from Implementation of CM2–CM11**

23 Additional traffic and heavy-duty equipment required to implement CM2-CM11 would generate
24 emissions that could expose nearby receptors to local concentrations of PM, CO, and DPM. Fugitive
25 dust particulate matter concentrations are expected to be highest in the vicinity of restoration areas,
26 particularly near those sites that require substantial earthmoving activities or site grading. The
27 potential for CO hot-spots would be greatest along transportation routes used for site inspections,
28 monitoring, and routine maintenance. DPM concentrations would likely be greatest along vehicle
29 haul routes and adjacent to restoration sites that require substantial off-road equipment.

30 Sensitive receptors near restoration sites and haul routes could be exposed to increased PM, CO, and
31 DPM concentrations. Because the extent of construction and operational activities is not known at
32 this time, a determination of effects based on a quantitative analysis is not possible. Activities shown
33 in Table 22-29 with the greatest potential to have short or long-term air quality impacts are also
34 anticipated to have the greatest potential to expose receptors to substantial pollutant
35 concentrations. The effect would vary according to the equipment used, the location and timing of
36 the actions called for in the conservation measure, the meteorological and air quality conditions at
37 the time of implementation, and the location of receptors relative to the emission source. Potential
38 health effects would be evaluated and identified in the subsequent project-level environmental
39 analysis conducted for the CM2–CM11 restoration and enhancement actions.

40 The effect of increases in PM, CO, or DPM (cancer and non-cancer-risk) in excess of applicable air
41 district thresholds (Table 22-8) at receptor locations could result in adverse health impacts.
42 Mitigation Measures AQ-24 and AQ-25 would be available to reduce this effect.

1 **CEQA Conclusion:** Construction and operational emissions associated with the restoration and
 2 enhancement actions under Alternative 4 would result in a significant impact if PM, CO, or DPM
 3 (cancer and non-cancer-risk) concentrations at receptor locations exceed the applicable local air
 4 district thresholds shown in Table 22-8; these effects are expected to be further evaluated and
 5 identified in the subsequent project-level environmental analysis conducted for the CM2–CM11
 6 restoration and enhancement actions. Mitigation Measures AQ-24 and AQ-25 would ensure localized
 7 concentrations at receptor locations would be below applicable air quality management district
 8 thresholds (see Table 22-8). Consequently, this impact would be less than significant.

9 **Mitigation Measure AQ-24: Develop an Air Quality Mitigation Plan (AQMP) to Ensure Air**
 10 **District Regulations and Recommended Mitigation are Incorporated into Future**
 11 **Conservation Measures and Associated Project Activities**

12 Please see Mitigation Measure AQ-24 under Impact AQ-24 in the discussion of Alternative 4.

13 **Mitigation Measure AQ-25: Prepare a Project-Level Health Risk Assessment to Reduce**
 14 **Potential Health Risks from Exposure to Localized DPM and PM Concentrations**

15 The site-specific environmental review for all conservation measures will perform a detailed
 16 health risk assessment (HRA) if sensitive receptors are located within 0.50 mile of project
 17 activities. The half-mile buffer represents the furthest distance at which Plan Area air districts
 18 recommend performing a HRA as pollutant concentrations dissipate as a function of distance
 19 from the emissions source. The site-specific HRA will evaluate potential health risks to nearby
 20 sensitive receptors from exposure to DPM and PM (as recommended by the local air district's
 21 CEQA Guidelines) and ensure that impacts are below applicable air district health risk
 22 thresholds. If the HRA identifies health risks in excess of applicable air district health risk
 23 thresholds, additional mitigation and/or site design changes will be incorporated into the site-
 24 specific environmental review to ensure health risks are reduced below applicable air district
 25 health risk thresholds. Examples of potential additional mitigation include use aftermarket
 26 equipment controls (e.g., diesel particulate filters), alternative fuels, and advanced engine
 27 technologies (e.g., Tier 4 engines), as well as construction of vegetative buffers and receptor
 28 relocation.

29 **Impact AQ-26: Creation of Potential Odors Affecting a Substantial Number of People from**
 30 **Implementation of CM2–CM11**

31 Implementation of CM2–CM11 will convert land types to increase available habitat for BDCP
 32 covered species (e.g., cultivated land converted to tidal natural communities). Diesel emissions from
 33 earthmoving equipment could generate temporary odors, but these would quickly dissipate and
 34 cease once construction is completed. Accordingly, construction activities associated with CM2–
 35 CM11 are not anticipated to result in nuisance odors.

36 Among the land use types affected by the program, the conservation measures would restore
 37 estuarine wetland and upland habitats, both of which can generate odors from natural processes.
 38 Odors from wetlands are typically caused from organic decomposition that releases hydrogen
 39 sulfide gas. Similar reactions take place in tidal mudflats due to anaerobic decomposition caused by
 40 bacteria (National Oceanic and Atmospheric Administration 2008). While restored land uses
 41 associated with the program have the potential to generate odors from natural processes, the
 42 emissions would be similar in origin and magnitude to the existing land use types in the restored

1 area (e.g., managed wetlands). Moreover, specific odor effects would be evaluated and identified in
 2 the subsequent project-level environmental analysis conducted for the CM2–CM11 restoration and
 3 enhancement actions. Accordingly, odor-related effects associated with CM2–CM11 would not be
 4 adverse.

5 **CEQA Conclusion:** Alternative 4 would not result in the addition of major odor producing facilities.
 6 Diesel emissions during construction could generate temporary odors, but these would quickly
 7 dissipate and cease once construction is completed. Increases in wetland, tidal, and upland habitats
 8 may increase the potential for odors from natural processes. However, the origin and magnitude of
 9 odors would be similar to the existing land use types in the restored area (e.g., managed wetlands).
 10 Moreover, specific odor impacts would be evaluated and identified in the subsequent project-level
 11 environmental analysis conducted for the CM2–CM11 restoration and enhancement actions.
 12 Accordingly, the impact of exposure of sensitive receptors to potential odors would be less than
 13 significant. No mitigation is required.

14 **Impact AQ-27: Generation of Cumulative Greenhouse Gas Emissions from Implementation of** 15 **CM2–CM11**

16 **NEPA Effects:** CM2–CM11 implemented under Alternative 4 would result in local GHG emissions
 17 from construction equipment and vehicle exhaust. Restoration activities with the greatest potential
 18 for emissions include those that break ground and require use of earthmoving equipment. The type
 19 of restoration action and related construction equipment use are shown in Table 22-29.
 20 Implementing CM2–CM11 would also affect long-term sequestration rates through land use changes,
 21 such as conversion of agricultural land to wetlands, inundation of peat soils, drainage of peat soils,
 22 and removal or planting of carbon-sequestering plants.

23 Without additional information on site-specific characteristics associated with each of the
 24 restoration components, a complete assessment of GHG flux from CM2–CM11 is currently not
 25 possible. The effect of carbon sequestration and CH₄ generation would vary by land use type, season,
 26 and chemical and biological characteristics; these effects would be evaluated and identified in the
 27 subsequent project-level environmental analysis conducted for the CM2–CM11 restoration and
 28 enhancement actions. Mitigation Measures AQ-24 and AQ-27 would be available to reduce this
 29 effect. However, due to the potential for increases in GHG emissions from construction and land use
 30 change, this effect would be adverse.

31 **CEQA Conclusion:** The restoration and enhancement actions under Alternative 4 could result in a
 32 significant impact if activities are inconsistent with applicable GHG reduction plans, do not
 33 contribute to a lower carbon future, or generate excessive emissions, relative to other projects
 34 throughout the state. These effects are expected to be further evaluated and identified in the
 35 subsequent project-level environmental analysis conducted for the CM2–CM11 restoration and
 36 enhancement actions. Mitigation Measures AQ-24 and AQ-27 would be available to reduce this
 37 impact, but may not be sufficient to reduce to a less-than-significant level. Consequently, this impact
 38 is would be significant and unavoidable.

39 **Mitigation Measure AQ-24: Develop an Air Quality Mitigation Plan (AQMP) to Ensure Air** 40 **District Regulations and Recommended Mitigation are Incorporated into Future** 41 **Conservation Measures and Associated Project Activities**

42 Please see Mitigation Measure AQ-24 under Impact AQ-24 in the discussion of Alternative 4.

1 **Mitigation Measure AQ-27: Prepare a Land Use Sequestration Analysis to Quantify and**
2 **Mitigate (as Needed) GHG Flux Associated with Conservation Measures and Associated**
3 **Project Activities**

4 BDCP proponents will prepare a land use sequestration analysis to evaluate GHG flux associated
5 with implementation of CM2–CM11. The land use analysis will evaluate the one-time carbon
6 storage loss associated with vegetation removal, soil carbon content, and existing and future
7 with project GHG flux. In the event that the land use analysis demonstrates a net positive GHG
8 flux, feasible strategies to reduce GHG emissions will be undertaken. To the extent feasible,
9 mitigation shall require project design changes so that land uses that serve as carbon sinks (i.e.,
10 result in net decreases in carbon) are not replaced with other uses that are sources (i.e., result in
11 net increases in carbon) of GHG emissions.

12 **22.3.3.10 Alternative 5—Dual Conveyance with Pipeline/Tunnel and**
13 **Intake 1 (3,000 cfs; Operational Scenario C)**

14 One intake would be constructed under Alternative 5. For the purposes of this analysis, it was
15 assumed that Intake 1 (on the east bank of the Sacramento River), an intermediate forebay, and a
16 buried pipeline and tunnel conveyance would be constructed under Alternative 5 (Figures 3-2 and
17 3-12 in Chapter 3, *Description of Alternatives*).

18 Construction and operation of Alternative 5 would require the use of electricity, which would be
19 supplied by the California electrical grid. Power plants located throughout the state supply the grid
20 with power, which will be distributed to the Study area to meet project demand. Power supplied by
21 statewide power plants will generate criteria pollutants. Because these power plants are located
22 throughout the state, criteria pollutant emissions associated with Alternative 5 electricity demand
23 cannot be ascribed to a specific air basin or air district within the Study area. Criteria pollutant
24 emissions from electricity consumption, which are summarized in Table 22-116, are therefore
25 provided for informational purposes only and are not included in the impact conclusion. Negative
26 values represent an emissions benefit, relative to the No Action Alternative or Existing Conditions.

1 **Table 22-116 Criteria Pollutant Emissions from Electricity Consumption: Construction and Net**
 2 **Project Operations, Alternative 5 (tons/year)^{a,b}**

Year	Analysis	ROG	CO	NO _x	PM10	PM2.5 ^c	SO ₂
2016	-	0	0	0	0	0	0
2017	-	0	0	0	0	0	0
2018	-	<1	<1	<1	<1	<1	<1
2019	-	<1	1	<1	<1	<1	1
2020	-	<1	6	<1	1	1	3
2021	-	<1	17	1	1	1	7
2022	-	<1	24	2	2	2	10
2023	-	<1	21	2	2	2	9
2024	-	<1	22	2	2	2	9
2025	-	<1	15	1	1	1	6
2026	-	<1	5	<1	<1	<1	2
2027	-	<1	1	<1	<1	<1	<1
2028	-	<1	<1	<1	<1	<1	<1
2029	-	<1	<1	<1	<1	<1	<1
ELT	CEQA	<1	2	22	2	2	9
LLT	NEPA	1	7	93	8	8	39
LLT	CEQA	-1	-5	-72	-6	-6	-30

NEPA = Compares criteria pollutant emissions after implementation of Alternative 5 to the No Action Alternative.

CEQA = Compares criteria pollutant emissions after implementation of Alternative 5 to Existing Conditions.

^a Emissions assume implementation of RPS (see Appendix 22A, *Air Quality Analysis Methodology*). Power plants that generate electricity for the proposed project would be subject to local air district permitting requirements, including standards to implement BACT to reduce criteria pollutant emissions.

^b Because GHG emissions are cumulative (see Section 22.3.2.1) and not evaluated at the local air basin or air district level, they are discussed in Impacts AQ-21 and AQ-22. The GHG analysis for SWP power utilizes actual and forecasted GHG emissions rates for the SWP system, which differs slightly from the above analysis. Statewide grid average emission factors were utilized for the above analysis as criteria pollutant emission factors for SWP were unavailable. Please also note that the above analysis does not account for additional renewable energy that will be procured through modifications to DWR's REPP (see Impact AQ-22). Accordingly, the emissions results presented above represent a conservative assessment of potential criteria pollutant emissions.

^c Emission factors for PM2.5 are currently unavailable. Consequently, PM2.5 emissions were assumed to equal PM10 emissions. Because PM2.5 represents a fraction of PM10, this approach represents a conservative assessment of PM2.5 emissions from electricity consumption.

3

4 Construction activities would generate emissions of ozone precursors (ROG and NO_x), CO, PM10,
 5 PM2.5, and SO₂. Table 22-117 summarizes criteria pollutant emissions that would be generated in
 6 the BAAQMD, SMAQMD, SJVAPCD, and YSAQMD in pounds per day and tons per year. Emissions
 7 estimates include implementation of environmental commitments (see Appendix 3B, *Environmental*
 8 *Commitments*). Although emissions are presented in different units (pounds and tons), the amounts
 9 of emissions are identical (i.e., 2,000 pounds is identical to 1 ton). Summarizing emissions in both

1 pounds per day and tons per year is necessary to evaluate project-level effects against the
2 appropriate air district thresholds, which are given in both pounds and tons (see Table 22-8).

3 As shown in Appendix 22B, *Air Quality Assumptions*, construction activities during several phases
4 will likely occur concurrently. To ensure a conservative analysis, the maximum daily emissions
5 during these periods of overlap were estimated assuming all equipment would operate at the same
6 time—this gives the maximum total project-related air quality impact during construction.
7 Accordingly, the daily emissions estimates represent a conservative assessment of construction
8 impacts. Exceedances of the air district thresholds are shown in underlined text.
9

1 **Table 22-117. Criteria Pollutant Emissions from Construction of Alternative 5 (pounds/day and tons/year)**

Year	Maximum Daily Emissions (pounds/day)										Annual Emissions (tons/year)									
	Bay Area Air Quality Management District										Bay Area Air Quality Management District									
	ROG	NO _x	CO	PM10			PM2.5			SO ₂	ROG	NO _x	CO	PM10			PM2.5			SO ₂
			Exhaust	Dust	Total	Exhaust	Dust	Total				Exhaust	Dust	Total	Exhaust	Dust	Total			
2016	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
2017	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
2018	7	<u>101</u>	47	1	64	64	1	15	16	1	<1	1	1	<1	1	1	<1	<1	<1	
2019	21	<u>247</u>	139	1	114	115	1	27	29	2	2	13	12	<1	2	2	<1	<1	<1	
2020	31	<u>332</u>	206	2	135	137	2	33	35	2	3	22	19	<1	3	4	<1	1	1	
2021	34	<u>348</u>	216	3	142	145	2	35	37	3	4	29	25	<1	5	6	<1	1	1	
2022	38	<u>397</u>	236	2	172	174	2	43	45	3	4	32	26	<1	7	8	<1	2	2	
2023	<u>96</u>	<u>777</u>	564	7	317	324	6	63	70	6	7	52	43	1	19	19	<1	3	4	
2024	<u>104</u>	<u>909</u>	604	7	436	444	7	93	100	8	11	78	66	1	24	25	1	4	5	
2025	<u>96</u>	<u>856</u>	548	6	405	411	6	89	95	8	7	46	40	<1	16	16	<1	3	3	
2026	<u>62</u>	<u>617</u>	370	5	355	359	4	79	83	7	5	35	30	<1	14	14	<1	2	3	
2027	53	<u>513</u>	311	5	310	316	5	68	73	6	3	18	16	<1	11	12	<1	2	2	
2028	17	<u>243</u>	105	1	238	239	1	52	53	3	<1	1	1	<1	4	4	<1	1	1	
2029	8	<u>154</u>	49	1	113	113	1	29	30	2	<1	<1	<1	<1	<1	<1	<1	<1	<1	
<i>Thresholds</i>	<i>54</i>	<i>54</i>	<i>-</i>	<i>82</i>	<i>BMPs</i>	<i>-</i>	<i>54</i>	<i>BMPs</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	
Year	Sacramento Metropolitan Air Quality Management District										Sacramento Metropolitan Air Quality Management District									
	ROG	NO _x	CO	PM10			PM2.5			SO ₂	ROG	NO _x	CO	PM10			PM2.5			SO ₂
				Exhaust	Dust	Total	Exhaust	Dust	Total				Exhaust	Dust	Total	Exhaust	Dust	Total		
2016	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
2017	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
2018	24	<u>273</u>	162	5	78	83	4	13	18	1	1	9	6	<1	5	5	<1	1	1	
2019	43	<u>448</u>	305	5	231	236	4	39	43	2	2	14	19	<1	16	17	<1	2	2	
2020	63	<u>688</u>	436	8	291	298	7	46	53	3	6	47	39	1	24	25	1	3	4	
2021	71	<u>790</u>	581	8	361	369	8	58	66	3	7	67	58	1	34	35	1	5	6	
2022	84	<u>889</u>	723	8	374	381	8	61	68	4	9	75	84	1	35	36	1	5	6	
2023	123	<u>1,193</u>	957	13	489	502	12	77	89	8	13	100	108	1	42	43	1	6	7	
2024	242	<u>2,231</u>	1,504	30	673	703	28	120	149	11	18	134	126	2	45	47	2	7	9	
2025	219	<u>2,059</u>	1,354	27	613	640	26	110	136	11	18	129	114	2	31	34	2	5	7	
2026	197	<u>1,639</u>	1,068	23	460	483	22	89	111	9	17	121	104	2	29	31	2	4	7	
2027	199	<u>1,787</u>	1,174	26	501	527	25	94	119	10	13	98	80	2	31	33	2	5	6	
2028	58	<u>618</u>	393	4	330	333	4	64	67	4	2	16	18	<1	18	19	<1	3	3	
2029	22	<u>331</u>	164	2	171	173	2	38	40	3	<1	3	3	<1	3	3	<1	<1	<1	
<i>Thresholds</i>	<i>-</i>	<i>85</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	

Year	San Joaquin Valley Air Pollution Control District										San Joaquin Valley Air Pollution Control District									
	ROG	NO _x	CO	PM10			PM2.5			SO ₂	ROG	NO _x	CO	PM10			PM2.5			SO ₂
				Exhaust	Dust	Total	Exhaust	Dust	Total					Exhaust	Dust	Total	Exhaust	Dust	Total	
2016	0	0	0	0	29	29	0	4	4	0	0	0	0	0	2	2	0	<1	<1	0
2017	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2018	22	105	154	2	94	96	2	12	13	1	1	5	8	<1	9	10	<1	1	1	<1
2019	75	581	542	6	155	162	6	20	26	2	8	<u>63</u>	60	1	15	<u>15</u>	1	2	2	<1
2020	147	1,078	1,038	14	246	260	13	30	44	4	<u>15</u>	<u>108</u>	106	1	27	<u>29</u>	1	3	5	<1
2021	210	1,605	1,477	22	563	586	21	66	87	5	<u>23</u>	<u>168</u>	168	2	44	<u>46</u>	2	5	7	1
2022	155	1,036	1,145	12	219	231	12	28	40	3	<u>22</u>	<u>144</u>	162	2	26	<u>28</u>	2	3	5	<1
2023	136	856	994	9	142	151	9	19	28	3	<u>19</u>	<u>117</u>	143	1	14	<u>15</u>	1	2	3	<1
2024	133	799	955	8	121	129	8	16	24	3	<u>18</u>	<u>107</u>	131	1	13	14	1	2	3	<1
2025	111	650	746	6	97	103	6	13	19	2	<u>12</u>	<u>71</u>	81	1	11	12	1	1	2	<1
2026	73	459	466	4	60	64	4	7	11	2	5	<u>29</u>	27	<1	2	3	<1	<1	1	<1
2027	1	1	4	3	1	4	3	<1	3	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
2028	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2029	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<i>Thresholds</i>	-	-	-	-	-	-	-	-	-	-	<i>10</i>	<i>10</i>	-	-	-	<i>15</i>	-	-	<i>15</i>	-
Year	Yolo Solano Air Quality Management District										Yolo Solano Air Quality Management District									
	ROG	NO _x	CO	PM10			PM2.5			SO ₂	ROG	NO _x	CO	PM10			PM2.5			SO ₂
				Exhaust	Dust	Total	Exhaust	Dust	Total					Exhaust	Dust	Total	Exhaust	Dust	Total	
2016	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2017	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2018	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2019	3	83	17	<1	22	23	<1	6	6	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
2020	3	83	18	<1	22	23	<1	6	6	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
2021	4	99	22	<1	27	28	<1	7	7	1	<1	2	<1	<1	1	1	<1	<1	<1	<1
2022	6	142	32	<1	41	41	<1	11	11	1	<1	5	1	<1	1	1	<1	<1	<1	<1
2023	6	142	38	<1	51	51	<1	13	14	1	<1	4	1	<1	2	2	<1	<1	<1	<1
2024	6	138	38	<1	51	51	<1	13	14	1	<1	4	1	<1	1	1	<1	<1	<1	<1
2025	6	126	35	<1	48	48	<1	12	13	1	<1	3	1	<1	1	1	<1	<1	<1	<1
2026	5	102	29	<1	39	40	<1	10	10	1	<1	3	1	<1	1	1	<1	<1	<1	<1
2027	5	98	29	<1	39	40	<1	10	10	1	<1	2	1	<1	1	1	<1	<1	<1	<1
2028	3	50	15	<1	20	20	<1	5	5	<1	<1	2	1	<1	1	1	<1	<1	<1	<1
2029	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<i>Thresholds</i>	-	-	-	-	-	<i>80</i>	-	-	-	-	<i>10</i>	<i>10</i>	-	-	-	-	-	-	-	-

1 Operation and maintenance activities under Alternative 5 would result in emissions of ROG, NO_x, CO,
2 PM10, PM2.5, and SO₂. Emissions were quantified for both ELT and LLT conditions, although
3 activities would take place annually until project decommissioning. Future emissions, in general, are
4 anticipated to lessen because of continuing improvements in vehicle and equipment engine
5 technology.

6 Table 22-118 summarizes criteria pollutant emissions associated with operation of Alternative 5 in
7 the BAAQMD, SMAQMD, and SJVAPCD in pounds per day and tons per year (no operational
8 emissions would be generated in the YSAMQD). Although emissions are presented in different units
9 (pounds and tons), the amounts of emissions are identical (i.e., 2,000 pounds is identical to 1 ton).
10 Summarizing emissions in both pounds per day and tons per year is necessary to evaluate project-
11 level effects against the appropriate air district thresholds, which are given in both pounds and tons
12 (see Table 22-8).

13 **Table 22-118. Criteria Pollutant Emissions from Operation of Alternative 5 (pounds per day and**
14 **tons per year)**

Condition	Maximum Daily Emissions (pounds/day)						Annual Emissions (tons/year)					
	Bay Area Air Quality Management District						Bay Area Air Quality Management District					
	ROG	NO _x	CO	PM10	PM2.5	SO ₂	ROG	NO _x	CO	PM10	PM2.5	SO ₂
ELT	3	19	32	6	2	<1	0.01	0.08	0.14	0.02	0.01	<0.01
LLT	3	16	31	6	1	<1	0.01	0.07	0.13	0.02	0.01	<0.01
<i>Thresholds</i>	<i>54</i>	<i>54</i>	-	<i>82</i>	<i>82</i>	-	-	-	-	-	-	-
Condition	Sacramento Metropolitan Air Quality Management District						Sacramento Metropolitan Air Quality Management District					
	ROG	NO _x	CO	PM10	PM2.5	SO ₂	ROG	NO _x	CO	PM10	PM2.5	SO ₂
ELT	3	20	36	6	2	<1	0.06	0.38	0.74	0.12	0.04	<0.01
LLT	3	17	34	6	2	<1	0.05	0.32	0.71	0.12	0.03	<0.01
<i>Thresholds</i>	<i>65</i>	<i>65</i>	-	-	-	-	-	-	-	-	-	-
Condition	San Joaquin Valley Air Pollution Control District						San Joaquin Valley Air Pollution Control District					
	ROG	NO _x	CO	PM10	PM2.5	SO ₂	ROG	NO _x	CO	PM10	PM2.5	SO ₂
ELT	3	19	36	6	2	<1	0.01	0.07	0.13	0.02	<0.01	<0.01
LLT	3	16	33	6	1	<1	0.01	0.06	0.12	0.01	<0.01	<0.01
<i>Thresholds</i>	-	-	-	-	-	-	<i>10</i>	<i>10</i>	-	<i>15</i>	<i>15</i>	-

15 **Impact AQ-1: Generation of Criteria Pollutants in Excess of the SMAQMD Regional Thresholds**
16 **during Construction of the Proposed Water Conveyance Facility**

17 **NEPA Effects:** As shown in Table 22-117, construction emissions would exceed SMAQMD's daily NO_x
18 threshold for all years between 2018 and 2029, even with implementation of environmental
19 commitments (see Appendix 3B, *Environmental Commitments*). Since NO_x is a precursor to ozone
20 and PM, exceedances of SMAQMD's daily NO_x threshold could impact both regional ozone and PM
21 formation, which could worsen regional air quality and air basin attainment of the NAAQS and
22 CAAQS.

1 While equipment could operate at any work area identified for this alternative, the highest level of
 2 NO_x emissions in the SMAQMD is expected to occur at those sites where the duration and intensity
 3 of construction activities would be greatest. This includes all intake and intake pumping plant sites
 4 along the east bank of the Sacramento River, as well as the intermediate forebay (and pumping
 5 plant) site west of South Stone Lake and east of the Sacramento River.

6 Environmental commitments will reduce construction-related emissions; however, as shown in
 7 Table 22-117, emissions would still exceed the air district threshold identified in Table 22-8 and
 8 would result in an adverse effect to air quality. Mitigation Measures AQ-1a and AQ-1b would be
 9 available to reduce NO_x emissions, and would thus address regional effects related to secondary
 10 ozone and PM formation.

11 **CEQA Conclusion:** NO_x emissions generated during construction would exceed SMAQMD threshold
 12 identified in Table 22-8. Since NO_x is a precursor to ozone and PM, exceedances of SMAQMD's daily
 13 NO_x threshold could impact both regional ozone and PM formation. SMAQMD's regional emissions
 14 thresholds (Table 22-8) and PM₁₀ screening criteria have been adopted to ensure projects do not
 15 hinder attainment of the CAAQS or NAAQS. The impact of generating NO_x emissions in excess of
 16 local air district thresholds would therefore violate applicable air quality standards in the Study area
 17 and could contribute to or worsen an existing air quality conditions. Mitigation Measures AQ-1a and
 18 AQ-1b would be available to reduce NO_x emissions to a less-than-significant level by offsetting
 19 emissions to quantities below SMAQMD CEQA thresholds (see Table 22-8).

20 **Mitigation Measure AQ-1a: Mitigate and Offset Construction-Generated Criteria Pollutant**
 21 **Emissions within the SFNA to Net Zero (0) for Emissions in Excess of General Conformity**
 22 ***De Minimis* Thresholds (Where Applicable) and to Quantities below Applicable CEQA**
 23 **Thresholds for Other Pollutants**

24 Please see Mitigation Measure AQ-1a under Impact AQ-1 in the discussion of Alternative 1A.

25 **Mitigation Measure AQ-1b: Develop an Alternative or Complementary Offsite Mitigation**
 26 **Program to Mitigate and Offset Construction-Generated Criteria Pollutant Emissions**
 27 **within the SFNA to Net Zero (0) for Emissions in Excess of General Conformity *De Minimis***
 28 **Thresholds (Where Applicable) and to Quantities below Applicable CEQA Thresholds for**
 29 **Other Pollutants**

30 Please see Mitigation Measure AQ-1b under Impact AQ-1 in the discussion of Alternative 1A.

31 **Impact AQ-2: Generation of Criteria Pollutants in Excess of the YSAQMD Regional Thresholds**
 32 **during Construction of the Proposed Water Conveyance Facility**

33 **NEPA Effects:** As shown in Table 22-117, construction emissions would not exceed YSAQMD
 34 regional thresholds. Accordingly, there would be no adverse air quality effect.

35 **CEQA Conclusion:** Construction emissions would not exceed YSAQMD regional thresholds.
 36 Accordingly, this impact would be less than significant.

37 **Impact AQ-3: Generation of Criteria Pollutants in Excess of the BAAQMD Regional Thresholds**
 38 **during Construction of the Proposed Water Conveyance Facility**

39 **NEPA Effects:** As shown in Table 22-117, construction emissions would exceed BAAQMD's daily
 40 thresholds for the following pollutants and years, even with implementation of environmental

1 commitments. All other pollutants would be below air district thresholds and therefore would not
2 result in an adverse air quality effect.

- 3 • ROG: 2023–2026
- 4 • NO_x: 2018–2029

5 Since ROG and NO_x are precursors to ozone and NO_x is a precursor to PM, exceedances of BAAQMD's
6 ROG and NO_x thresholds could impact both regional ozone and PM formation, which could worsen
7 regional air quality and air basin attainment of the NAAQS and CAAQS.

8 While equipment could operate at any work area identified for this alternative, the highest level of
9 ROG and NO_x emissions in the BAAQMD are expected to occur at those sites where the duration and
10 intensity of construction activities would be greatest, including the site of the Byron Tract Forebay
11 adjacent to and south of Clifton Court Forebay.

12 Environmental commitments outlined in Appendix 3B, *Environmental Commitments*, will reduce
13 construction-related emissions; however, as shown in Table 22-117, ROG and NO_x emissions would
14 still exceed BAAQMD's regional thresholds identified in Table 22-8 and would result in an adverse
15 effect to air quality. Mitigation Measures AQ-3a and AQ-3b are available to reduce ROG and NO_x
16 emissions, and would thus address regional effects related to secondary ozone and PM formation.

17 **CEQA Conclusion:** Emissions of ROG and NO_x generated during construction would exceed BAAQMD
18 thresholds identified in Table 22-8. Since ROG and NO_x are precursors to ozone and NO_x is a
19 precursor to PM, exceedances of BAAQMD's ROG and NO_x thresholds could impact both regional
20 ozone and PM formation. The BAAQMD's regional emissions thresholds (Table 22-8) have been
21 adopted to ensure projects do not hinder attainment of the CAAQS or NAAQS. The impact of
22 generating emissions in excess of BAAQMD's regional thresholds would therefore violate applicable
23 air quality standards in the Study area and could contribute to or worsen an existing air quality
24 conditions. Mitigation Measures AQ-3a and AQ-3b would be available to reduce ROG and NO_x
25 emissions to a less-than-significant level by offsetting emissions to quantities below BAAQMD CEQA
26 thresholds (see Table 22-8).

27 **Mitigation Measure AQ-3a: Mitigate and Offset Construction-Generated Criteria Pollutant**
28 **Emissions within BAAQMD/SFBAAB to Net Zero (0) for Emissions in Excess of General**
29 **Conformity *De Minimis* Thresholds (Where Applicable) and to Quantities below**
30 **Applicable BAAQMD CEQA Thresholds for Other Pollutants**

31 Please see Mitigation Measure AQ-3a under Impact AQ-3 in the discussion of Alternative 1A.

32 **Mitigation Measure AQ-3b: Develop an Alternative or Complementary Offsite Mitigation**
33 **Program to Mitigate and Offset Construction-Generated Criteria Pollutant Emissions**
34 **within the BAAQMD/SFBAAB to Net Zero (0) for Emissions in Excess of General**
35 **Conformity *De Minimis* Thresholds (Where Applicable) and to Quantities below**
36 **Applicable BAAQMD CEQA Thresholds for Other Pollutants**

37 Please see Mitigation Measure AQ-3b under Impact AQ-3 in the discussion of Alternative 1A.

1 **Impact AQ-4: Generation of Criteria Pollutants in Excess of the SJVAPCD Regional Thresholds**
 2 **during Construction of the Proposed Water Conveyance Facility**

3 **NEPA Effects:** As shown in Table 22-117, construction emissions would exceed SJVAPCD's annual
 4 thresholds for the following pollutants and years, even with implementation of environmental
 5 commitments. All other pollutants would be below air district thresholds and therefore would not
 6 result in an adverse air quality effect.

- 7 ● ROG: 2020–2025
- 8 ● NO_x: 2019–2026
- 9 ● PM10: 2019–2023

10 Since ROG and NO_x are precursors to ozone and NO_x is a precursor to PM, exceedances of SJVAPCD's
 11 ROG and NO_x thresholds could impact both regional ozone and PM formation, which could worsen
 12 regional air quality and air basin attainment of the NAAQS and CAAQS. Similarly, exceedances of
 13 SJVAPCD's PM10 threshold could impede attainment of the NAAQS and CAAQS for PM10.

14 While equipment could operate at any work area identified for this alternative, the highest level of
 15 ROG, NO_x, and PM10 emissions in the SJVAPCD is expected to occur at those sites where the
 16 duration and intensity of construction activities would be greatest. This includes all temporary and
 17 permanent utility sites, as well as all construction sites along the pipeline/tunnel conveyance
 18 alignment. For a map of the proposed tunnel alignment, see Mapbook Figure M3-1.

19 Environmental commitments outlined in Appendix 3B, *Environmental Commitments*, will reduce
 20 construction-related emissions; however, as shown in Table 22-117, ROG, NO_x, and PM10 emissions
 21 would still exceed SJVAPCD's regional thresholds identified in Table 22-8 and would result in an
 22 adverse effect to air quality. Mitigation Measures AQ-4a and AQ-4b are available to reduce ROG, NO_x,
 23 and PM10 emissions, and would thus address regional effects related to secondary ozone and PM
 24 formation.

25 **CEQA Conclusion:** Emissions of ROG, NO_x, and PM10 generated during construction would exceed
 26 SJVAPCD's annual significance threshold identified in Table 22-8. Since ROG and NO_x are precursors
 27 to ozone and NO_x is a precursor to PM, exceedances of SJVAPCD's ROG and NO_x thresholds could
 28 impact both regional ozone and PM formation, which could worsen regional air quality and air basin
 29 attainment of the NAAQS and CAAQS. Similarly, exceedances of SJVAPCD's PM10 threshold could
 30 impede attainment of the NAAQS and CAAQS for PM10. SJVAPCD's regional emissions thresholds
 31 (Table 22-8) have been adopted to ensure projects do not hinder attainment of the CAAQS or
 32 NAAQS. The impact of generating ROG, NO_x, and PM10 emissions in excess of local air district
 33 thresholds would therefore violate applicable air quality standards in the Study area and could
 34 contribute to or worsen an existing air quality conditions. Mitigation Measures AQ-4a and AQ-4b
 35 would be available to reduce ROG, NO_x, and PM10 emissions to a less-than-significant level by
 36 offsetting emissions to quantities below SJVAPCD CEQA thresholds (see Table 22-8).

37 **Mitigation Measure AQ-4a: Mitigate and Offset Construction-Generated Criteria Pollutant**
 38 **Emissions within SJVAPCD/SJVAB to Net Zero (0) for Emissions in Excess of General**
 39 **Conformity *De Minimis* Thresholds (Where Applicable) and to Quantities below**
 40 **Applicable SJVAPCD CEQA Thresholds for Other Pollutants**

41 Please see Mitigation Measure AQ-4a under Impact AQ-4 in the discussion of Alternative 1A.

1 **Mitigation Measure AQ-4b: Develop an Alternative or Complementary Offsite Mitigation**
 2 **Program to Mitigate and Offset Construction-Generated Criteria Pollutant Emissions**
 3 **within the SJVAPCD/SJVAB to Net Zero (0) for Emissions in Excess of General Conformity**
 4 ***De Minimis* Thresholds (Where Applicable) and to Quantities below Applicable SJVAPCD**
 5 **CEQA Thresholds for Other Pollutants**

6 Please see Mitigation Measure AQ-4b under Impact AQ-4 in the discussion of Alternative 1A.

7 **Impact AQ-5: Generation of Criteria Pollutants in Excess of the SMAQMD Regional Thresholds**
 8 **from Operation and Maintenance of the Proposed Water Conveyance Facility**

9 ***NEPA Effects:*** Operations and maintenance in SMAQMD include both routine activities and yearly
 10 maintenance. Daily activities at all pumping plants and intakes are covered by maintenance,
 11 management, repair, and operating crews. Yearly maintenance would include annual inspections,
 12 tunnel dewatering, and sediment removal (see Appendix 22A, *Air Quality Analysis Methodology*, for
 13 additional detail). The highest concentration of operational emissions in the SMAQMD are expected
 14 at intake and intake pumping plant sites along the east bank of the Sacramento River, as well as at
 15 the intermediate forebay (and pumping plant) site west of South Stone Lake and east of the
 16 Sacramento River. As shown in Table 22-118, operation and maintenance activities under
 17 Alternative 5 would not exceed SMAQMD's regional thresholds of significance and there would be no
 18 adverse effect (see Table 22-8). Accordingly, project operations would not contribute to or worsen
 19 existing air quality exceedances. There would be no adverse effect.

20 ***CEQA Conclusion:*** Emissions generated during operation and maintenance activities would not
 21 exceed SMAQMD regional thresholds for criteria pollutants. SMAQMD's regional emissions
 22 thresholds (Table 22-8) have been adopted to ensure projects do not hinder attainment of the
 23 CAAQS or NAAQS. The impact of generating emissions in excess of local air district would therefore
 24 violate applicable air quality standards in the Study area and could contribute to or worsen an
 25 existing air quality conditions. Because project operations would not exceed SMAQMD regional
 26 thresholds, the impact would be less than significant. No mitigation is required.

27 **Impact AQ-6: Generation of Criteria Pollutants in Excess of the YSAQMD Regional Thresholds**
 28 **from Operation and Maintenance of the Proposed Water Conveyance Facility**

29 ***NEPA Effects:*** Alternative 5 would not construct any permanent features in the YSAQMD that would
 30 require routine operations and maintenance. No operational emissions would be generated in the
 31 YSAQMD. Consequently, operation of Alternative 5 would neither exceed the YSAQMD thresholds of
 32 significance nor result in an adverse effect on air quality.

33 ***CEQA Conclusion:*** Operational emissions generated by the alternative would not exceed YSAQMD's
 34 regional thresholds of significance. This impact would be less than significant. No mitigation is
 35 required.

36 **Impact AQ-7: Generation of Criteria Pollutants in Excess of the BAAQMD Regional Thresholds**
 37 **from Operation and Maintenance of the Proposed Water Conveyance Facility**

38 ***NEPA Effects:*** Operations and maintenance in BAAQMD include annual inspections, sediment
 39 removal, and tunnel dewatering (see Appendix 22A, *Air Quality Analysis Methodology*, for additional
 40 detail). The highest concentration of operational emissions in the BAAQMD are expected at the
 41 Byron Tract Forebay (including control gates), which is adjacent to and south of Clifton Court

1 Forebay. As shown in Table 22-118, operation and maintenance activities under Alternative 5 would
 2 not exceed BAAQMD's regional thresholds of significance (see Table 22-8). Thus, project operations
 3 would not contribute to or worsen existing air quality exceedances. There would be no adverse
 4 effect.

5 **CEQA Conclusion:** Emissions generated during operation and maintenance activities would not
 6 exceed BAAQMD regional thresholds for criteria pollutants. BAAQMD's regional emissions
 7 thresholds (Table 22-8) have been adopted to ensure projects do not hinder attainment of the
 8 CAAQS or NAAQS. The impact of generating emissions in excess of local air district thresholds would
 9 violate applicable air quality standards in the Study area and could contribute to or worsen an
 10 existing air quality conditions. Because project operations would not exceed BAAQMD regional
 11 thresholds, the impact would be less than significant. No mitigation is required.

12 **Impact AQ-8: Generation of Criteria Pollutants in Excess of the SJVAPCD Regional Thresholds** 13 **from Operation and Maintenance of the Proposed Water Conveyance Facility**

14 **NEPA Effects:** Operations and maintenance in SJVAPCD include annual inspections and tunnel
 15 dewatering (see Appendix 22A, *Air Quality Analysis Methodology*, for additional detail). The highest
 16 concentration of operational emissions in the SJVAPCD is expected at construction sites along the
 17 pipeline/tunnel conveyance alignment. For a map of the proposed tunnel alignment, see Mapbook
 18 Figure M3-1. As shown in Table 22-116, operation and maintenance activities under Alternative 5
 19 would not exceed SJVAPCD's regional thresholds of significance (see Table 22-8). Accordingly,
 20 project operations would not contribute to or worsen existing air quality exceedances. There would
 21 be no adverse effect.

22 **CEQA Conclusion:** Emissions generated during operation and maintenance activities would not
 23 exceed SJVAPCD's regional thresholds of significance. SJVAPCD's regional emissions thresholds
 24 (Table 22-8) have been adopted to ensure projects do not hinder attainment of the CAAQS or
 25 NAAQS. The impact of generating emissions in excess of local air district thresholds would violate
 26 applicable air quality standards in the Study area and could contribute to or worsen an existing air
 27 quality conditions. Because project operations would not exceed SJVAPCD regional thresholds, the
 28 impact would be less than significant. No mitigation is required.

29 **Impact AQ-9: Exposure of Sensitive Receptors to Health Hazards from Localized Particulate** 30 **Matter in Excess of SMAQMD's Health-Based Concentration Thresholds**

31 **NEPA Effects:** Alternative 5 involves the development of four less intakes (approximately 80%
 32 volumetric reduction) as compared to Alternative 1A. As such, emissions generated by construction
 33 of Alternative 5 would be lower than Alternative 1A due to less construction activities. Localized
 34 health risk impacts resulting from construction emissions at Intakes 2, 3, 4, and 5 would be much
 35 lower or not occur due to absence in the development of these project features. Based on the
 36 emissions inventory conducted for the air quality analysis, development of Alternative 5 would
 37 result in 46% less PM10 emissions and 45% less PM2.5 emissions as compared with Alternative 1A.

38 All annual PM10 and PM2.5 concentrations were found to be less than SMAQMD's annual thresholds
 39 for Alternative 1A. Because Alternative 5 would require less construction activity and generate
 40 fewer emissions than Alternative 1A, annual PM10 and PM2.5 concentrations from the development
 41 of Alternative 5 would also be less than the respective SMAQMD annual thresholds. However, as
 42 shown in Table 22-14, the maximum predicted 24-hour PM10 concentration for Alternative 1A
 43 would exceed SMAQMD's threshold of 2.5 µg/m³. The modeled exceedances occur at 225 receptor

1 locations near intakes and intake work areas. Because Alternative 5 would not involve the
 2 development of Intakes 2, 3, 4, and 5, emissions contributions from these intakes would not occur. It
 3 is anticipated that Alternative 5 would still result in 24-hour PM10 exceedances in the vicinity of
 4 Intake 1, but at fewer receptor locations than Alternative 1A. Accordingly, this alternative would
 5 expose a sensitive receptor to adverse levels of localized particulate matter concentrations.
 6 Mitigation Measure AQ-9 is available to address this effect.

7 **CEQA Conclusion:** Respirable particulates pose a human health hazard by bypassing the defenses
 8 within the mucous ciliary system and entering deep lung tissue. Construction of Alternative 5 would
 9 result in the short-term exposure of receptors to PM10 concentrations that exceed SMAQMD
 10 threshold. This would be a significant impact. Mitigation Measure AQ-9 outlines a tiered strategy to
 11 reduce PM10 concentrations and public exposure to a less-than-significant level.

12 **Mitigation Measure AQ-9: Implement Measures to Reduce Re-Entrained Road Dust and**
 13 **Receptor Exposure to PM2.5 and PM10**

14 Please see Mitigation Measure AQ-9 under Impact AQ-9 in the discussion of Alternative 1A.

15 **Impact AQ-10: Exposure of Sensitive Receptors to Health Hazards from Localized Particulate**
 16 **Matter in Excess of YSAQMD's Health-Based Concentration Thresholds**

17 **NEPA Effects:** Table 22-15 under Alternative 1A shows that the maximum predicted PM2.5 and
 18 PM10 concentrations are less than YSAQMD's adopted thresholds. Because Alternative 5 would
 19 require less construction activity and generate fewer emissions than Alternative 1A, annual PM10
 20 and PM2.5 concentrations from the development of Alternative 5 would also be less than the
 21 respective YSAQMD annual thresholds. The project would also implement all air district-
 22 recommended onsite fugitive dust controls, such as regular watering. Accordingly, this alternative
 23 would not expose sensitive receptors to adverse levels of localized particulate matter
 24 concentrations.

25 **CEQA Conclusion:** Respirable particulates pose a human health hazard by bypassing the defenses
 26 within the mucous ciliary system and entering deep lung tissue. Construction of Alternative 1A
 27 would result in PM2.5 and PM10 concentrations at receptor locations that are below the significance
 28 thresholds established by the YSAQMD. Since Alternative 5 results in fewer overall emissions,
 29 localized particulate matter concentrations at analyzed receptors would not result in significant
 30 human health impacts. No mitigation is required.

31 **Impact AQ-11: Exposure of Sensitive Receptors to Health Hazards from Localized Particulate**
 32 **Matter in Excess of BAAQMD's Health-Based Concentration Thresholds**

33 **NEPA Effects:** Table 22-16 under Alternative 1A shows that the maximum predicted PM2.5
 34 concentrations are less than BAAQMD's adopted thresholds. Because Alternative 5 would require
 35 less construction activity and generate fewer emissions than Alternative 1A, PM2.5 concentrations
 36 from the development of Alternative 5 would also be less than the respective BAAQMD annual
 37 thresholds. The project would also implement all air district-recommended onsite fugitive dust
 38 controls, such as regular watering. Accordingly, this alternative would not expose sensitive
 39 receptors to adverse levels of localized particulate matter concentrations.

40 **CEQA Conclusion:** Respirable particulates pose a human health hazard by bypassing the defenses
 41 within the mucous ciliary system and entering deep lung tissue. Construction of Alternative 1A

1 would result in PM_{2.5} concentrations at receptor locations that are below the significance
 2 thresholds established by the BAAQMD. Since Alternative 5 results in fewer overall emissions,
 3 localized particulate matter concentrations at analyzed receptors would not result in significant
 4 human health impacts. No mitigation is required.

5 **Impact AQ-12: Exposure of Sensitive Receptors to Health Hazards from Localized Particulate**
 6 **Matter in Excess of SJVAPCD's Health-Based Concentration Thresholds**

7 *NEPA Effects:* Table 22-17 under Alternative 1A shows that with exception of 24-hour PM₁₀,
 8 maximum predicted PM_{2.5} and PM₁₀ concentrations are less than SJVAPCD's adopted thresholds.
 9 The 24-hour PM₁₀ concentrations attributable to the project would exceed the SJVAPCD's
 10 significance threshold at one receptor location. Emissions from the tunnel construction activities
 11 and concrete batch plant contribute to the exceedance at this location. Though Alternative 5 would
 12 result in less construction activities than Alternative 1A, it is anticipated that the receptor impacted
 13 by emissions from the concrete batch plant and tunnel activities would remain affected. Accordingly,
 14 this alternative would expose a sensitive receptor to adverse levels of localized particulate matter
 15 concentrations. Mitigation Measure AQ-9 is available to address this effect.

16 *CEQA Conclusion:* Respirable particulates pose a human health hazard by bypassing the defenses
 17 within the mucous ciliary system and entering deep lung tissue. Construction of Alternative 5 would
 18 result in the short-term exposure of receptors to PM₁₀ concentrations that exceed SJVAPCD's
 19 threshold. This would be a significant impact. Mitigation Measure AQ-9 outlines a tiered strategy to
 20 reduce PM₁₀ concentrations and public exposure to a less-than-significant level.

21 **Mitigation Measure AQ-9: Implement Measures to Reduce Re-Entrained Road Dust and**
 22 **Receptor Exposure to PM_{2.5} and PM₁₀**

23 Please see Mitigation Measure AQ-9 under Impact AQ-9 in the discussion of Alternative 1A.

24 **Impact AQ-13: Exposure of Sensitive Receptors to Health Hazards from Localized Carbon**
 25 **Monoxide**

26 *NEPA Effects:* Continuous engine exhaust may elevate localized CO concentrations. Receptors
 27 exposed to these CO "hot-spots" may have a greater likelihood of developing adverse health effects
 28 (as described in Section 22.1.2). CO hot-spots are typically observed at heavily congested
 29 intersections where a substantial number of gasoline-powered vehicles idle for prolonged durations
 30 throughout the day. Construction sites are less likely to result in localized CO hot-spots due to the
 31 nature of construction activities (Sacramento Metropolitan Air Quality Management District 2014),
 32 which normally utilize diesel-powered equipment for intermittent or short durations. Moreover,
 33 construction sites must comply with the Occupational Safety and Health Administration's (OSHA) CO
 34 exposure standards for onsite workers. Unlike regional pollutants (e.g., ROG and NO_x), CO
 35 concentrations also dissipate as a function of distance and will therefore be lower at offsite receptor
 36 locations. Accordingly, given that construction activities typically do not result in CO hot-spots,
 37 onsite concentrations must comply with OSHA standards, and CO levels dissipate as a function of
 38 distance, equipment-generated CO emissions (see Table 22-117) are not anticipated to result in
 39 adverse health hazards to sensitive receptors.

40 Construction traffic may contribute to increased roadway congestion, which could lead to conditions
 41 conducive to CO hot-spot formation. As shown in Table 19-8, the highest peak hour traffic volumes
 42 under BPBGPP—12,567 vehicles per hour—would occur on westbound Interstate 80 between

1 Suisun Valley Road and State Route 12.⁵² This is about half of the congested traffic volume modeled
 2 by BAAQMD (24,000 vehicles per hour) that would be needed to contribute to a localized CO hot-
 3 spot, and less than half of the traffic volume modeled by SMAQMD (31,600 vehicles per hour). The
 4 BAAQMD's and SMAQMD's CO screening criteria were developed based on County average vehicle
 5 fleets that are primarily comprised of gasoline vehicles. Construction vehicles would be
 6 predominantly diesel trucks, which generate fewer CO emissions per idle-hour and vehicle mile
 7 traveled than gasoline-powered vehicles. Accordingly, the air district screening thresholds provide a
 8 conservative evaluation threshold for the assessment of potential CO emissions impacts during
 9 construction.

10 Based on the above analysis, even if all 12,567 vehicles on the modeled traffic segment drove
 11 through the same intersection in the peak hour, CO concentrations adjacent to the traveled way
 12 would not exceed the CAAQS or NAAQS according to BAAQMD's and SMAQMD's screening criteria.
 13 Thus, construction traffic is not anticipated to result in adverse health hazards to sensitive
 14 receptors.

15 **CEQA Conclusion:** Continuous engine exhaust may elevate localized CO concentrations. Receptors
 16 exposed to these CO "hot-spots" may have a greater likelihood of developing adverse health effects.
 17 Construction sites are less likely to result in localized CO hot-spots due to the nature of construction
 18 activities (Sacramento Metropolitan Air Quality Management District 2014), which normally utilize
 19 diesel-powered equipment for intermittent or short durations. Moreover, construction sites must
 20 comply with the OSHA CO exposure standards for onsite workers. Accordingly, given that
 21 construction activities typically do not result in CO hot-spots, onsite concentrations must comply
 22 with OSHA standards, and CO levels dissipate as a function of distance, equipment-generated CO
 23 emissions are not anticipated to result in significant health hazards to sensitive receptors. Similarly,
 24 peak-hour construction traffic on local roadways would not exceed BAAQMD's or SMAQMD's
 25 conservative screening criteria for the formation potential CO hot-spots. This impact would be less
 26 than significant. No mitigation is required.

27 **Impact AQ-14: Exposure of Sensitive Receptors to Health Hazards from Diesel Particulate**
 28 **Matter in Excess of SMAQMD's Chronic Non-Cancer and Cancer Risk Thresholds**

29 **NEPA Effects:** As shown in Table 22-18, Alternative 1A would not exceed the SMAQMD's thresholds
 30 for chronic non-cancer hazard or cancer risk. Because Alternative 5 would require less construction
 31 activity and generate fewer emissions than Alternative 1A, chronic non-cancer hazard and cancer
 32 risk from the development of Alternative 5 would also be less than the respective SMAQMD
 33 significance thresholds. Accordingly, this alternative would not expose sensitive receptors to
 34 adverse levels of DPM such as would result in chronic non-cancer hazards or cancer risk.

35 **CEQA Conclusion:** DPM generated during construction poses inhalation-related chronic non-cancer
 36 hazard and cancer risk if adjacent receptors are exposed to significant concentrations for prolonged
 37 durations. DPM generated during Alternative 5 construction would not exceed the SMAQMD's
 38 chronic non-cancer hazard or cancer risk threshold. Therefore, this impact for DPM emissions would
 39 be less than significant. No mitigation is required.

⁵² The above volumes are based on the traffic analysis conducted for Alternative 1A. Since few vehicles would be required under Alternative 5, traffic impacts would likely be less than those estimated for Alternative 1A.

1 **Impact AQ-15: Exposure of Sensitive Receptors to Health Hazards from Diesel Particulate**
 2 **Matter in Excess of YSAQMD's Chronic Non-Cancer and Cancer Risk Thresholds**

3 **NEPA Effects:** As shown in Table 22-19, Alternative 1A would not exceed the YSAQMD's thresholds
 4 for chronic non-cancer hazard or cancer risk. Because Alternative 5 would require less construction
 5 activity and generate fewer emissions than Alternative 1A, chronic non-cancer hazard and cancer
 6 risk from the development of Alternative 5 would also be less than the respective YSAQMD
 7 significance thresholds. Accordingly, this alternative would not expose sensitive receptors to
 8 adverse levels of DPM such as would result in chronic non-cancer hazards or cancer risk.

9 **CEQA Conclusion:** DPM generated during construction poses inhalation-related chronic non-cancer
 10 hazard and cancer risk if adjacent receptors are exposed to significant concentrations for prolonged
 11 durations. The DPM generated during Alternative 5 construction would not exceed the YSAQMD's
 12 chronic non-cancer or cancer thresholds, and thus would not expose sensitive receptors to
 13 substantial health hazards. Therefore, this impact for DPM emissions would be less than significant.
 14 No mitigation is required.

15 **Impact AQ-16: Exposure of Sensitive Receptors to Health Hazards from Diesel Particulate**
 16 **Matter in Excess of BAAQMD's Chronic Non-Cancer and Cancer Risk Thresholds**

17 **NEPA Effects:** As shown in Table 22-20, Alternative 1A would not exceed the BAAQMD's thresholds
 18 for chronic non-cancer hazard; however, it would exceed BAAQMD's cancer risk threshold. The
 19 primary emission sources for these exceedances are from a project haul route, control structure
 20 work area and potential spoil area. While the impact of Alternative 5 would be less than Alternative
 21 1A, Alternative 5 may still expose sensitive receptors to adverse levels of carcinogenic DPM
 22 concentrations.

23 Mitigation Measure AQ-16 would be available to reduce exposure to substantial cancer risk by
 24 relocating affected receptors. Although Mitigation Measure AQ-16 would reduce the severity of this
 25 effect, the BDCP proponents are not solely responsible for implementation of the measure. If a
 26 landowner chooses not to accept DWR's offer of relocation assistance, an adverse effect in the form
 27 excess cancer risk above air district thresholds would occur. Therefore, this effect would be adverse.
 28 If, however, all landowners accept DWR's offer of relocation assistance, effects would not be
 29 adverse.

30 **CEQA Conclusion:** DPM generated during construction poses inhalation-related chronic non-cancer
 31 hazard and cancer risk if adjacent receptors are exposed to significant concentrations for prolonged
 32 durations. The DPM generated during Alternative 5 construction would not exceed the BAAQMD's
 33 chronic non-cancer hazard threshold; however, it would exceed the BAAQMD's cancer thresholds.
 34 Therefore, this impact for DPM emissions would be significant.

35 Mitigation Measure AQ-16 would be available to reduce exposure to substantial cancer risk by
 36 relocating affected receptors. Although Mitigation Measure AQ-16 would reduce the severity of this
 37 effect, the BDCP proponents are not solely responsible for implementation of the measure. If a
 38 landowner chooses not to accept DWR's offer of relocation assistance, a significant impact in the
 39 form excess cancer risk above air district thresholds would occur. Therefore, this effect would be
 40 significant and unavoidable. If, however, all landowners accept DWR's offer of relocation assistance,
 41 the impact would be less than significant.

1 **Mitigation Measure AQ-16: Relocate Sensitive Receptors to Avoid Excess Cancer Risk**

2 Please see Mitigation Measure AQ-16 under Impact AQ-16 in the discussion of Alternative 1A.

3 **Impact AQ-17: Exposure of Sensitive Receptors to Health Hazards from Diesel Particulate**
 4 **Matter in Excess of SJVAPCD's Chronic Non-Cancer and Cancer Risk Thresholds**

5 **NEPA Effects:** Table 22-21 under Alternative 1A shows that the maximum predicted chronic non-
 6 cancer hazard and cancer risk associated with the project are less than SJVAPCD's adopted
 7 thresholds. Because Alternative 5 would require less construction activity and generate fewer
 8 emissions than Alternative 1A, chronic non-cancer hazard and cancer risk from the development of
 9 Alternative 5 would also be less than the respective SJVAPCD significance thresholds. Accordingly,
 10 this alternative would not expose sensitive receptors to adverse levels of DPM such as would result
 11 in chronic non-cancer hazards or cancer risk.

12 **CEQA Conclusion:** DPM generated during construction poses inhalation-related chronic non-cancer
 13 hazard and cancer risk if adjacent receptors are exposed to significant concentrations for prolonged
 14 durations. The DPM generated during Alternative 5 construction would not exceed the SJVAPCD's
 15 chronic non-cancer or cancer thresholds, and thus would not expose sensitive receptors to
 16 substantial pollutant concentrations. Therefore, this impact for DPM emissions would be less than
 17 significant. No mitigation is required.

18 **Impact AQ-18: Exposure of Sensitive Receptors to *Coccidioides immitis* (Valley Fever)**

19 **NEPA Effects:** As discussed under Alternative 1A, earthmoving activities during construction could
 20 release *C. immitis* spores if filaments are present and other soil chemistry and climatic conditions
 21 are conducive to spore development. Receptors adjacent to the construction area may therefore be
 22 exposed to increase risk of inhaling *C. immitis* spores and subsequent development of Valley Fever.
 23 Dust-control measures are the primary defense against infection (United States Geological Survey
 24 2000). Implementation of advanced air-district recommended fugitive dust controls outlined in
 25 Appendix 3B, *Environmental Commitments*, would avoid dusty conditions and reduce the risk of
 26 contracting Valley Fever through routine watering and other controls. Therefore, this alternative's
 27 effect of exposure of sensitive receptors to increased Valley Fever risk during construction would
 28 not be adverse.

29 **CEQA Conclusion:** Construction of the water conveyance facility would involve earthmoving
 30 activities that could release *C. immitis* spores if filaments are present and other soil chemistry and
 31 climatic conditions are conducive to spore development. Receptors adjacent to the construction area
 32 may therefore be exposed to increase risk of inhaling *C. immitis* spores and subsequent development
 33 of Valley Fever. Implementation of air-district recommended fugitive dust controls outlined in
 34 Appendix 3B, *Environmental Commitments*, would avoid dusty conditions and reduce the risk of
 35 contracting Valley Fever through routine watering and other controls. Therefore, this impact would
 36 be less than significant. No mitigation is required.

37 **Impact AQ-19: Creation of Potential Odors Affecting a Substantial Number of People during**
 38 **Construction or Operation of the Proposed Water Conveyance Facility**

39 **NEPA Effects:** As discussed under Alternative 1A, odors from construction activities would be
 40 localized and generally confined to the immediate area surrounding the construction site. Moreover,
 41 odors would be temporary and localized, and they would cease once construction activities have

1 been completed. Thus, it is not anticipated that construction of CM1 would create objectionable
2 odors from construction equipment or asphalt paving.

3 Construction of the water conveyance facility would require removal of subsurface material during
4 tunnel excavation and sediment removal. As discussed under Alternative 5, geotechnical tests
5 indicate that VOC levels in Plan Area soils are below the method detection limits, indicating that
6 organic decay of exposed RTM and sediment will be relatively low (URS 2014). Moreover, drying
7 and stockpiling of the removed RTM and sediment will occur under aerobic conditions, which will
8 further limit any potential decomposition and associated malodorous products. Accordingly, it is not
9 anticipated that tunnel and sediment excavation would create objectionable odors.

10 Typical facilities known to produce odors include landfills, wastewater treatment plants, food
11 processing facilities, and certain agricultural activities. Alternative 5 would not result in the addition
12 of facilities associated with odors, and as such, long-term operation of the water conveyance facility
13 would not result in objectionable odors.

14 **CEQA Conclusion:** Alternative 5 would not result in the addition of major odor producing facilities.
15 Diesel emissions during construction could generate temporary odors, but these would quickly
16 dissipate and cease once construction is completed. Likewise, potential odors generated during
17 asphalt paving would be addressed through mandatory compliance with air district rules and
18 regulations. While tunnel excavation would unearth substantial quantities of RTM, geotechnical
19 tests indicate that soils in the Plan Area have relatively low organic constituents. Moreover, drying
20 and stockpiling of the removed RTM will occur under aerobic conditions, which will further limit
21 any potential decomposition and associated malodorous products. Accordingly, the impact of
22 exposure of sensitive receptors to potential odors would be less than significant. No mitigation is
23 required.

24 **Impact AQ-20: Generation of Criteria Pollutants in the Excess of Federal *De Minimis***
25 **Thresholds from Construction and Operation and Maintenance of the Proposed Water**
26 **Conveyance Facility**

27 **NEPA Effects:** EPA's General Conformity Rule (40 CFR Parts 51 and 93) only applies to Federal
28 actions that are taken in EPA-designated "nonattainment" or "maintenance" areas. Accordingly, as
29 outlined in Section III.A of the General Conformity Rule, "only actions which cause emissions in
30 designated nonattainment and maintenance areas are subject to the regulations". Criteria pollutant
31 emissions resulting from construction and operation of Alternative 5 in the SFNA, SJVAB, and
32 SFBAAB are presented in Table 22-119. Exceedances of the federal *de minimis* thresholds are shown
33 in underlined text.

34 **Sacramento Federal Nonattainment Area**

35 As shown in Table 22-119, implementation of Alternative 5 would exceed the following SFNA
36 federal *de minimis* thresholds:

- 37 ● NO_x: 2020–2027

38 NO_x is a precursor to ozone and NO_x is a precursor to PM, for which the SFNA is in nonattainment
39 for the NAAQS. Since project emissions exceed the federal *de minimis* thresholds for NO_x, a general
40 conformity determination must be made to demonstrate that total direct and indirect emissions of
41 NO_x would conform to the appropriate SFNA SIP for each year of construction in which the *de*
42 *minimis* thresholds are exceeded.

1 NO_x is also a precursor to PM and can contribute to PM formation. As discussed above, Sacramento
 2 County is currently designated maintenance for the PM₁₀ NAAQS and portions of the SVAB are
 3 designated nonattainment for the PM_{2.5} NAAQS. NO_x emissions in excess of 100 tons per year in
 4 Sacramento County trigger a secondary PM₁₀ precursor threshold, whereas NO_x emissions in excess
 5 of 100 tons per year in the SVAB trigger a secondary PM_{2.5} precursor threshold. Since NO_x
 6 emissions can contribute to PM formation, NO_x emissions in excess of these secondary precursor
 7 thresholds could conflict with the applicable PM₁₀ and PM_{2.5} SIPs. Accordingly, NO_x offsets pursued
 8 for the purposes of general conformity must for those years in which NO_x emissions exceed 100 tons
 9 occur within the federally designated PM_{2.5} nonattainment and PM₁₀ maintenance areas of the
 10 SVAB.

11 As shown in Table 22-117, NO_x emissions generated by construction activities in SMAQMD
 12 (Sacramento County) would exceed 100 tons per year between 2023 and 2026. The project
 13 therefore triggers the secondary PM₁₀ precursor threshold, requiring all NO_x offsets for 2023
 14 through 2026 to occur within Sacramento County.

15 Given the magnitude of NO_x emissions and the limited geographic scope available for offsets in 2023
 16 through 2026 (Sacramento County), neither Mitigation Measures AQ-1a nor 1b could feasibly reduce
 17 NO_x emissions to net zero for the purposes of general conformity.⁵³ This impact would be adverse.
 18 In the event that Alternative 5 is selected as the APA, Reclamation, USFWS, and NMFS would need to
 19 demonstrate that conformity is met for NO_x and secondary PM₁₀ formation through a local air
 20 quality modeling analysis (i.e., dispersion modeling) or other acceptable methods to ensure project
 21 emissions do not cause or contribute to any new violations of the NAAQS or increase the frequency
 22 or severity of any existing violations.

23 **Mitigation Measure AQ-1a: Mitigate and Offset Construction-Generated Criteria Pollutant**
 24 **Emissions within the SFNA to Net Zero (0) for Emissions in Excess of General Conformity**
 25 ***De Minimis* Thresholds (Where Applicable) and to Quantities below Applicable CEQA**
 26 **Thresholds for Other Pollutants**

27 Please see Mitigation Measure AQ-1a under Impact AQ-1 in the discussion of Alternative 1A.

28 **Mitigation Measure AQ-1b: Develop an Alternative or Complementary Offsite Mitigation**
 29 **Program to Mitigate and Offset Construction-Generated Criteria Pollutant Emissions**
 30 **within the SFNA to Net Zero (0) for Emissions in Excess of General Conformity *De Minimis***
 31 **Thresholds (Where Applicable) and to Quantities below Applicable CEQA Thresholds for**
 32 **Other Pollutants**

33 Please see Mitigation Measure AQ-1b under Impact AQ-1 in the discussion of Alternative 1A.

⁵³ The secondary PM precursor thresholds are triggered through the General Conformity Regulation (40 CFR 93.153 (a)(1)). Accordingly, confinement of the geographic scope for available offsets only applies to the General Conformity determination and does not influence mitigation feasibility for Impacts AQ-1 or AQ-28.

1 **Table 22-119. Criteria Pollutant Emissions from Construction and Operation of Alternative 5 in**
 2 **Nonattainment and Maintenance Areas of the SFNA, SJVAB, and SFBAAB (tons/year)**

Year	Sacramento Federal Nonattainment Area					
	ROG	NO _x ^a	CO ^b	PM10 ^c	PM2.5	SO ₂
2016	0	0	0	0	0	0
2017	0	0	0	0	0	0
2018	1	9	<1	5	1	<1
2019	2	14	<1	17	2	<1
2020	6	<u>47</u>	<1	25	4	<1
2021	7	<u>69</u>	2	35	6	<1
2022	9	<u>80</u>	3	36	6	<1
2023	13	<u>104</u>	3	43	8	<1
2024	18	<u>138</u>	3	47	9	1
2025	18	<u>132</u>	1	34	7	<1
2026	18	<u>124</u>	1	31	7	<1
2027	13	<u>100</u>	1	33	6	<1
2028	3	18	1	19	3	<1
2029	<1	3	<1	3	<1	<1
ELT	0.06	0.38	0.74	0.12	0.04	<0.01
LLT	0.05	0.32	0.71	0.12	0.03	<0.01
<i>De Minimis</i>	<i>25</i>	<i>25</i>	<i>100</i>	<i>100</i>	<i>100</i>	<i>100</i>
Year	San Joaquin Valley Air Basin					
	ROG	NO _x ^a	CO ^b	PM10	PM2.5	SO ₂
2016	0	0	0	2	<1	0
2017	0	0	0	0	0	0
2018	1	5	0	10	1	<1
2019	8	<u>63</u>	0	15	2	<1
2020	<u>15</u>	<u>108</u>	0	29	5	<1
2021	<u>23</u>	<u>168</u>	0	46	7	1
2022	<u>22</u>	<u>144</u>	0	28	5	<1
2023	<u>19</u>	<u>117</u>	0	15	3	<1
2024	<u>18</u>	<u>107</u>	0	14	3	<1
2025	<u>12</u>	<u>71</u>	0	12	2	<1
2026	5	<u>29</u>	0	3	1	<1
2027	<1	0	0	<1	<1	<1
2028	0	0	0	0	0	0
2029	0	0	0	0	0	0
ELT	0.01	0.07	0.13	0.02	<0.01	<0.01
LLT	0.01	0.06	0.12	0.01	<0.01	<0.01
<i>De Minimis</i>	<i>10</i>	<i>10</i>	<i>100</i>	<i>100</i>	<i>100</i>	<i>100</i>

Year	San Francisco Bay Area Air Basin					
	ROG	NO _x	CO ^b	PM10 ^d	PM2.5	SO ₂
2016	0	0	0	-	0	0
2017	0	0	0	-	0	0
2018	<1	1	<1	-	<1	<1
2019	2	13	<1	-	<1	<1
2020	3	22	1	-	1	<1
2021	4	29	1	-	1	<1
2022	4	32	2	-	2	<1
2023	7	52	3	-	4	<1
2024	11	78	3	-	5	1
2025	7	46	2	-	3	<1
2026	5	35	2	-	3	<1
2027	3	18	1	-	2	<1
2028	<1	1	<1	-	1	<1
2029	<1	<1	<1	-	<1	<1
ELT	0.01	0.08	0.14	-	0.01	<0.01
LLT	0.01	0.07	0.13	-	0.01	<0.01
<i>De Minimis</i>	<i>100</i>	<i>100</i>	<i>100</i>	<i>-</i>	<i>100</i>	<i>100</i>

^a NO_x emissions in excess of 100 tons per year within federally designated PM10 and PM2.5 nonattainment or maintenance areas trigger a secondary PM10 and PM2.5 precursor threshold. NO_x emissions in excess of this secondary threshold could conflict with the applicable PM10 and PM2.5 SIPs. Accordingly, NO_x offsets pursued for the purposes of general conformity for those years in which NO_x emissions exceed 100 tons must occur within the federally designated PM2.5 nonattainment and PM10 maintenance areas, as applicable.

^b The proposed water conveyance facility is located within a federally designated CO attainment area. Accordingly, CO emissions generated by construction of CM1 are not subject to the General Conformity Rule and are excluded from the emissions summary and general conformity analysis (40 CFR Part 51 and 93, Section III.A). Emissions presented in the table are limited those generated by haul trucks, which would occur in federally designated CO maintenance area.

^c There are no federally designated PM10 maintenance areas in Yolo County. Accordingly, PM10 emissions generated by construction of CM1 in Yolo County are not subject to the General Conformity Rule and are excluded from the emissions summary and general conformity analysis for the SFNA (40 CFR Part 51 and 93, Section III.A). Emissions presented in the table are limited those generated within Sacramento County.

^d There are no federally designated PM10 nonattainment or maintenance areas in the SFBAAB. Accordingly, PM10 emissions generated by construction of CM1 are not subject to the General Conformity Rule and are excluded from the emissions summary and general conformity analysis (40 CFR Part 51 and 93, Section III.A).

1

2 **San Joaquin Valley Air Basin**

3 As shown in Table 22-119, implementation of Alternative 5 would exceed the following SJVAB
4 federal *de minimis* thresholds:

- 5 ● ROG: 2020–2025
- 6 ● NO_x: 2019–2026

1 ROG and NO_x are precursors to ozone and NO_x is a precursor to PM, for which the SJVAB is in
 2 nonattainment for the NAAQS. Since project emissions exceed the federal *de minimis* threshold for
 3 ROG and NO_x, a general conformity determination must be made to demonstrate that total direct
 4 and indirect emissions of ROG and NO_x would conform to the appropriate SJVAB SIP for each year of
 5 construction in which the *de minimis* thresholds are exceeded.

6 NO_x is also a precursor to PM and can contribute to PM formation. As discussed above, the SJVAB is
 7 currently designated maintenance for the PM₁₀ NAAQS and nonattainment for the PM_{2.5} NAAQS.
 8 NO_x emissions in excess of 100 tons per year trigger a secondary PM precursor threshold, and could
 9 conflict with the applicable PM₁₀ and PM_{2.5} SIPs. As shown in Table 22-119, NO_x emissions
 10 generated by construction activities in the SJVAB would exceed 100 tons per year between 2020 and
 11 2024. NO_x offsets pursued for the purposes of general conformity for those years in which NO_x
 12 emissions exceed 100 tons must occur within the federally designated PM_{2.5} nonattainment and
 13 PM₁₀ maintenance areas of the SJVAB, which are consistent with the larger nonattainment
 14 boundary for ozone.

15 As shown in Appendix 22E, *General Conformity Determination*, Attachment 22E-1, SJVAPCD confirms
 16 that sufficient emissions reduction credits would be available to fully offset ROG and NO_x emissions
 17 in excess of the federal *de minimis* thresholds zero through implementation of Mitigation Measures
 18 AQ-4a and 4b. Mitigation Measures AQ-4a and 4b will ensure the requirements of the mitigation and
 19 offset program are implemented and conformity requirements for ROG and NO_x are met, should
 20 Alternative 5 be selected as the APA.

21 **Mitigation Measure AQ-4a: Mitigate and Offset Construction-Generated Criteria Pollutant**
 22 **Emissions within SJVAPCD/SJVAB to Net Zero (0) for Emissions in Excess of General**
 23 **Conformity *De Minimis* Thresholds (Where Applicable) and to Quantities below**
 24 **Applicable SJVAPCD CEQA Thresholds for Other Pollutants**

25 Please see Mitigation Measure AQ-4a under Impact AQ-4 in the discussion of Alternative 1A.

26 **Mitigation Measure AQ-4b: Develop an Alternative or Complementary Offsite Mitigation**
 27 **Program to Mitigate and Offset Construction-Generated Criteria Pollutant Emissions**
 28 **within the SJVAPCD/SJVAB to Net Zero (0) for Emissions in Excess of General Conformity**
 29 ***De Minimis* Thresholds (Where Applicable) and to Quantities below Applicable SJVAPCD**
 30 **CEQA Thresholds for Other Pollutants**

31 Please see Mitigation Measure AQ-4b under Impact AQ-4 in the discussion of Alternative 1A.

32 ***San Francisco Bay Area Air Basin***

33 As shown in Table 22-119, implementation of Alternative 5 would not exceed any of the SFBAAB
 34 federal *de minimis* thresholds. Accordingly, a general conformity determination is not required as
 35 total direct and indirect emissions would conform to the appropriate SFBAAB SIPs.

36 ***CEQA Conclusion:*** SFNA and SJVAB are classified as nonattainment areas with regard to the ozone
 37 NAAQS and the impact of increases in criteria pollutant emissions above the air basin *de minimis*
 38 thresholds could conflict with or obstruct implementation of the applicable air quality plans. Since
 39 construction emissions in the SFNA and SJVAB would exceed the *de minimis* thresholds for ROG
 40 (SJVAB only) and NO_x, this impact would be significant.

1 Mitigation Measures AQ-4a and AQ-4b would ensure project emissions would not result in an
2 increase in regional ROG or NO_x in the SJVAB. These measures would therefore ensure total direct
3 and indirect ROG and NO_x emissions generated by the project would conform to the appropriate
4 SJVAB SIPs by offsetting the action's emissions in the same or nearby area to net zero. Accordingly,
5 impacts would be less than significant with mitigation in the SJVAB.

6 Although Mitigation Measures AQ-1a and AQ-1b would reduce NO_x in the SFNA, given the magnitude
7 of NO_x emissions and the limited geographic scope available for offsets (Sacramento County),
8 neither measure could feasibly reduce NO_x emissions to net zero for the purposes of general
9 conformity. This impact would be significant and unavoidable in the SFNA.

10 Emissions generated within the SFBAAB would not exceed the SFBAAB de minimis thresholds and
11 would therefore conform to the appropriate SFBAAB SIPs. No mitigation is required.

12 **Impact AQ-21: Generation of Cumulative Greenhouse Gas Emissions during Construction of** 13 **the Proposed Water Conveyance Facility**

14 **NEPA Effects:** GHG (CO₂, CH₄, N₂O, SF₆, and HFCs) emissions resulting from construction of
15 Alternative 5 are summarized in Table 22-120. Emissions with are presented with implementation
16 of environmental commitments (see Appendix 3B, *Environmental Commitments*) and state mandates
17 to reduce GHG emissions. State mandates include the RPS, LCFS, and Pavley. These mandates do not
18 require additional action on the part of DWR, but will contribute to GHG emissions reductions. For
19 example, Pavley and LCFS will improve the fuel efficiency of vehicles and reduce the carbon content
20 of transportation fuels, respectively. Equipment used to construct the project will therefore be
21 cleaner and less GHG intensive than if the state mandates had not been established.

22 Table 22-121 summarizes GHG emissions that would be generated in the BAAQMD, SMAQMD,
23 SJVAPCD, and YSAQMD. The table does not include emissions from electricity generation as these
24 emissions would be generated by power plants located throughout the state and the specific
25 location of electricity-generating facilities is unknown (see discussion preceding this impact
26 analysis). Due to the global nature of GHGs, the determination of effects is based on total emissions
27 generated by construction (Table 22-120). GHG emissions presented in Table 22-121 are therefore
28 provided for information purposes only.

1 **Table 22-120. GHG Emissions from Construction of Alternative 5 (metric tons/year)^a**

Year	Equipment and Vehicles (CO ₂ e)	Electricity (CO ₂ e)	Concrete Batching (CO ₂)	Total CO ₂ e
2016	0	0	267	267
2017	0	0	0	0
2018	6,010	332	33,217	39,559
2019	33,023	1,853	5,217	40,093
2020	59,229	8,901	32,420	100,550
2021	89,408	23,697	64,302	177,407
2022	94,798	33,276	97,460	225,534
2023	102,793	29,622	95,154	227,569
2024	116,669	30,898	113,843	261,410
2025	83,139	20,844	76,019	180,001
2026	61,893	7,441	18,217	87,552
2027	37,728	1,421	26,272	65,421
2028	9,597	38	5,169	14,804
2029	1,300	1	0	1,301
<i>Total</i>	<i>695,587</i>	<i>158,323</i>	<i>567,557</i>	<i>1,421,467</i>

^a Emissions estimates do not account for GHG flux from land disturbance. Surface and subsurface (e.g., tunneling) activities may oxidize peat soils, releasing GHG emissions. However, recent geotechnical surveys indicated that peat is negligible below 80 feet of depth. The tunnel will be placed below this range and the design adjusted if peat soils are discovered. Peat material encountered during surface excavation for non-tunnel work will be covered with top soil to reduce oxidation when needed.

Values may not total correctly due to rounding.

2

3 **Table 22-121. GHG Emissions from Construction of Alternative 5 by Air District (metric tons/year)^a**

Year	Equipment and Vehicles (CO ₂ e)	Concrete Batching (CO ₂) ^a	Total CO ₂ e ^b
SMAQMD	251,094	340,534	591,628
YSAQMD	16,945	0	16,945
SJVAPCD	276,669	113,511	390,181
BAAQMD	150,879	113,511	264,390

^a Emissions assigned to each air district based on the number of batching plants located in that air district.

^b Values may not total correctly due to rounding.

4

5 Construction of Alternative 5 would generate a total of 1.4 million metric tons of GHG emissions
6 after implementation of environmental commitments and state mandates. This is equivalent to
7 adding 299,000 typical passenger vehicles to the road during construction (U.S. Environmental
8 Protection Agency 2014e). As discussed in section 22.3.2, *Determination of Effects*, any increase in
9 emissions above net zero associated with construction of the BDCP water conveyance features
10 would be adverse. Accordingly, this effect would be adverse. Mitigation Measure AQ-21, which
11 would develop a GHG Mitigation Program to reduce construction-related GHG emissions to net zero,
12 is available address this effect.

1 **CEQA Conclusion:** Construction of Alternative 5 would generate a total of 1.4 million metric tons of
 2 GHG emissions. This is equivalent to adding 299,000 typical passenger vehicles to the road during
 3 construction (U.S. Environmental Protection Agency 2014e). As discussed in section 22.3.2,
 4 *Determination of Effects*, any increase in emissions above net zero associated with construction of
 5 the BDCP water conveyance features would be significant. Mitigation Measure AQ-21 would develop
 6 a GHG Mitigation Program to reduce construction-related GHG emissions to net zero. Accordingly,
 7 this impact would be less-than-significant with implementation of Mitigation Measure AQ-21.

8 **Mitigation Measure AQ-21: Develop and Implement a GHG Mitigation Program to Reduce**
 9 **Construction Related GHG Emissions to Net Zero (0)**

10 Please see Mitigation Measure AQ-21 under Impact AQ-21 in the discussion of Alternative 1A.

11 **Impact AQ-22: Generation of Cumulative Greenhouse Gas Emissions from Operation and**
 12 **Maintenance of the Proposed Water Conveyance Facility and Increased Pumping**

13 **NEPA Effects:** Operation of Alternative 5 would generate direct and indirect GHG emissions. Sources
 14 of direct emissions include heavy-duty equipment, on road crew trucks, and employee vehicle
 15 traffic. Indirect emissions would be generated predominantly by electricity consumption required
 16 for pumping as well as, maintenance, lighting, and other activities.

17 Table 22-122 summarizes long-term operational GHG emissions associated with operations,
 18 maintenance, and increased SWP pumping. Emissions were quantified for both ELT and LLT
 19 conditions, although activities would take place annually until project decommissioning. Emissions
 20 include state mandates to reduce GHG emissions (described in Impact AQ-21) are presented (there
 21 are no BDCP specific operational environmental commitments). Total CO₂e emissions are compared
 22 to both the No Action Alternative (NEPA point of comparison) and Existing Conditions (CEQA
 23 baseline). As discussed in Section 22.3.1.2, equipment emissions are assumed to be zero under both
 24 the No Action Alternative (NEPA point of comparison) and Existing Conditions (CEQA baseline). The
 25 equipment emissions presented in Table 22-122 are therefore representative of project impacts for
 26 both the NEPA and CEQA analysis.

27 **Table 22-122. GHG Emissions from Operation, Maintenance, and Increased SWP Pumping, Alternative**
 28 **5 (metric tons/year)**

Condition	Equipment CO ₂ e	Electricity CO ₂ e		Total CO ₂ e	
		NEPA Point of Comparison	CEQA Baseline	NEPA Point of Comparison	CEQA Baseline
ELT	199	-	20,203	-	20,403
LLT	199	12,377	-9,198	12,576	-8,999

Note: The *NEPA point of comparison* compares total CO₂e emissions after implementation of Alternative 5 to the No Action Alternative, whereas the *CEQA baseline* compares total CO₂e emissions to Existing Conditions.

29
 30 Table 22-123 summarizes equipment CO₂e emissions that would be generated in the BAAQMD,
 31 SMAQMD, and SJVAPCD (no operational emissions would be generated in the YSAQMD). The table
 32 does not include emissions from SWP pumping as these emissions would be generated by power
 33 plants located throughout the state (see discussion preceding this impact analysis). GHG emissions
 34 presented in Table 22-118 are therefore provided for information purposes only.

Table 22-123. Equipment CO₂e Emissions from Operation and Maintenance of Alternative 5 by Air District (metric tons/year)

Air District	ELT	LLT
SMAQMD	147	145
SJVAPCD	25	26
BAAQMD	27	28
Total	199	199

^a Emissions do not include emissions generated by increased SWP pumping.

SWP Operational and Maintenance GHG Emissions Analysis

Alternative 5 would add approximately 622 GWh⁵⁴ of additional net electricity demand to operation of the SWP each year assuming 2060 conditions. Conditions at 2060 (LLT) are used for this analysis because they yield the largest potential additional net electricity requirements and therefore represent the largest potential impact. This 622 GWh is based on assumptions of future conditions and operations and includes all additional energy required to operate the project with BDCP Alternative 5 including any additional energy associated with additional water being moved through the system.

In the CAP, DWR developed estimates of historical, current, and future GHG emissions. Figure 22-19 shows those emissions as they were projected in the CAP and how those emissions projections would change with the additional electricity demands needed to operate the SWP with the addition of BDCP Alternative 5. As shown in Figure 22-19, in 2024, the year BDCP Alternative 5 is projected to go online, DWR total emissions jump from around 912,000 metric tons of CO₂e to around 1.2 million metric tons of CO₂e. This elevated level is still approximately 80,000 metric tons of CO₂e below DWR's designated GHG emissions reduction trajectory (red line, which is the linear interpolation between DWR's 2020 GHG emissions goal and DWR's 2050 GHG emissions goal.) The projection indicates even with the additional electricity required to operate BDCP Alternative 5, existing GHG emissions reduction measures would ensure that DWR's GHG emissions would not exceed the GHG emissions reduction trajectory and that the existing GHG emissions reduction measures would be sufficient to ensure that DWR meets its 2050 emissions reduction goal. The accommodation of over 600 additional GWh of electricity annually, without the need for additional GHG emissions reductions is possible because DWR intentionally designed its strategies in the CAP to allow for some load growth.

The CAP sets forth DWR's plan to manage its activities and operations to achieve its GHG emissions reduction goals. The CAP commits DWR to monitoring its emissions each year and evaluating its emissions every five years to determine whether it is on a trajectory to achieve its GHG emissions reduction goals. If it appears that DWR will not meet the GHG emission reduction goals established in the plan, DWR may make adjustments to existing emissions reduction measures, devise new measures to ensure achievement of the goals, or take other action.

⁵⁴ Estimated net energy demand differs slightly from what is presented in Chapter 21, *Energy*. This is because the above analysis includes energy needed for transmission and distribution of water along the Valley String, which is required to enable a comparison with the assumptions in DWR's CAP.

1 As shown in the analysis above and consistent with the analysis contained in the CAP and associated
 2 Initial Study and Negative Declaration for the CAP, BDCP Alternative 5 would not adversely affect
 3 DWR's ability to achieve the GHG emissions reduction goals set forth in the CAP. Further, Alternative
 4 5 would not conflict with any of DWR's specific action GHG emissions reduction measures and
 5 implements all applicable project level GHG emissions reduction measures as set forth in the CAP.
 6 BDCP Alternative 5 is therefore consistent with the analysis performed in the CAP. There would be
 7 no adverse effect.

8 **CEQA Conclusion:** SWP GHG emissions currently are below 1990 levels and achievement of the
 9 goals of the CAP means that total DWR GHG emissions will be reduced to 50% of 1990 levels by
 10 2020 and to 80% of 1990 levels by 2050. The implementation of BDCP Alternative 5 would not
 11 affect DWR's established emissions reduction goals or baseline (1990) emissions and therefore
 12 would not result in a change in total DWR emissions that would be considered significant. Prior
 13 adoption of the CAP by DWR already provides a commitment on the part of DWR to make all
 14 necessary modifications to DWR's REPP (as described above) or any other GHG emission reduction
 15 measure in the CAP that are necessary to achieve DWR's GHG emissions reduction goals. Therefore
 16 no amendment to the approved CAP is necessary to ensure the occurrence of the additional GHG
 17 emissions reduction activities needed to account for BDCP-related operational emissions. The effect
 18 of BDCP Alternative 5 with respect to GHG emissions is less than cumulatively considerable and
 19 therefore less than significant. No mitigation is required.

20 **Impact AQ-23: Generation of Cumulative Greenhouse Gas Emissions from increased CVP** 21 **Pumping as a Result of Implementation of CM1**

22 **NEPA Effects:** As previously discussed, DWR's CAP cannot be used to evaluate environmental
 23 impacts associated with increased CVP pumping, as emissions associated with CVP are not under
 24 DWR's control and are not included in the CAP. Accordingly, GHG emissions resulting from increased
 25 CVP energy use are evaluated separately from GHG emissions generated as a result of SWP energy
 26 use.

27 Under Alternative 5, operation of the CVP yields the generation of clean, GHG emissions-free,
 28 hydroelectric energy. This electricity is sold into the California electricity market or directly to
 29 energy users. Analysis of the No Action Alternative indicates that the CVP generates and will
 30 continue to generate all of the electricity needed to operate the CVP system and approximately
 31 3,500 GWh of excess hydroelectric energy that would be sold to energy users throughout California.
 32 Implementation of Alternative 5, however, would result in an increase of 57 GWh in the demand for
 33 CVP generated electricity, which would result in a reduction of 57 GWh of electricity available for
 34 sale from the CVP to electricity users. This reduction in the supply of GHG emissions-free electricity
 35 to the California electricity users could result in a potential indirect effect of the project, as these
 36 electricity users would have to acquire substitute electricity supplies that may result in GHG
 37 emissions (although additional conservation is also a possible outcome as well).

38 It is unknown what type of power source (e.g., renewable, natural gas) would be substituted for CVP
 39 electricity or if some of the lost power would be made up with higher efficiency. Given State
 40 mandates for renewable energy and incentives for energy efficiency, it is possible that a
 41 considerable amount of this power would be replaced by renewable resources or would cease to be
 42 needed as a result of higher efficiency. However, to ensure a conservative analysis, indirect
 43 emissions were quantified for the entire quantity of electricity (57 GWh) using the current and

1 future statewide energy mix (adjusted to reflect RPS) (please refer to Appendix 22A, *Air Quality*
2 *Analysis Methodology*, for additional detail on quantification methods).

3 Substitution of 57 GWh of electricity with a mix of sources similar to the current statewide mix
4 would result in emissions of 15,868 metric tons of CO₂e; however, under expected future conditions
5 (after full implementation of the RPS), emissions would be 12,330 metric tons of CO₂e.

6 Use of CVP hydroelectricity to meet increased electricity demand from operation of CVP facilities
7 associated with Alternative 5 would reduce available CVP hydroelectricity to other California
8 electricity users. Substitution of the lost electricity with electricity from other sources could
9 indirectly result in an increase of GHG emissions that is comparable or larger than the level of GHG
10 emissions that trigger mandatory GHG reporting for major facilities. As a result, these emissions
11 could contribute to a cumulatively considerable effect and are therefore adverse. However, these
12 emissions would be caused by dozens of independent electricity users, who had previously bought
13 CVP power, making decisions about different ways to substitute for the lost power. These decisions
14 are beyond the control of Reclamation or any of the other BDCP Lead Agencies. Further, monitoring
15 to determine the actual indirect change in emissions as a result of BDCP actions would not be
16 feasible. In light of the impossibility of predicting where any additional emissions would occur, as
17 well as Reclamation's lack of regulatory authority over the purchasers of power in the open market,
18 no workable mitigation is available or feasible.

19 **CEQA Conclusion:** Operation of the CVP is a federal activity beyond the control of any State agency
20 such as DWR, and the power purchases by private entities or public utilities in the private
21 marketplace necessitated by a reduction in available CVP-generated hydroelectric power are beyond
22 the control of the State, just as they are beyond the control of Reclamation. For these reasons, there
23 are no feasible mitigation measures that could reduce this potentially significant indirect impact,
24 which is solely attributable to operations of the CVP and not the SWP, to a less than significant level.
25 This impact is therefore determined to be significant and unavoidable.

26 **Impact AQ-24: Generation of Regional Criteria Pollutants from Implementation of CM2–CM11**

27 **NEPA Effects:** Table 22-29 summarizes potential construction and operational emissions that may
28 be generated by implementation of CM2–CM11. See the discussion of Impact AQ-24 under
29 Alternative 1A.

30 Criteria pollutants from restoration and enhancement actions could exceed applicable general
31 conformity *de minimis* levels and applicable local thresholds. The effect would vary according to the
32 equipment used in construction of a specific conservation measure, the location, the timing of the
33 actions called for in the conservation measure, and the air quality conditions at the time of
34 implementation; these effects would be evaluated and identified in the subsequent project-level
35 environmental analysis conducted for the CM2–CM11 restoration and enhancement actions. The
36 effect of increases in emissions during implementation of CM2–CM11 in excess of applicable general
37 conformity *de minimis* levels and air district regional thresholds (Table 22-8) could violate air basin
38 SIPs and worsen existing air quality conditions. Mitigation Measure AQ-24 would be available to
39 reduce this effect, but emissions would still be adverse.

40 **CEQA Conclusion:** Construction and operational emissions associated with the restoration and
41 enhancement actions would result in a significant impact if the incremental difference, or increase,
42 relative to Existing Conditions exceeds the applicable local air district thresholds shown in Table 22-
43 8; these effects are expected to be further evaluated and identified in the subsequent project-level

1 environmental analysis conducted for the CM2–CM11 restoration and enhancement actions.
 2 Mitigation Measure AQ-24 would be available to reduce this effect, but may not be sufficient to
 3 reduce emissions below applicable air quality management district thresholds (see Table 22-8).
 4 Consequently, this impact would be significant and unavoidable.

5 **Mitigation Measure AQ-24: Develop an Air Quality Mitigation Plan (AQMP) to Ensure Air**
 6 **District Regulations and Recommended Mitigation are Incorporated into Future**
 7 **Conservation Measures and Associated Project Activities**

8 Please see Mitigation Measure AQ-24 under Impact AQ-24 in the discussion of Alternative 1A.

9 **Impact AQ-25: Exposure of Sensitive Receptors to Health Hazards from Localized Particulate**
 10 **Matter, Carbon Monoxide, and Diesel Particulate Matter from Implementation of CM2–CM11**

11 **NEPA Effects:** The potential for Alternative 5 to expose sensitive receptors increased health hazards
 12 from localized PM, CO, and DPM would be similar to Alternative 1A. Activities shown in Table 22-29
 13 with the greatest potential to have short or long-term air quality impacts are also anticipated to
 14 have the greatest potential to expose receptors to substantial pollutant concentrations. The effect
 15 would vary according to the equipment used, the location and timing of the actions called for in the
 16 conservation measure, the meteorological and air quality conditions at the time of implementation,
 17 and the location of receptors relative to the emission source. Potential health effects would be
 18 evaluated and identified in the subsequent project-level environmental analysis conducted for the
 19 CM2–CM11 restoration and enhancement actions.

20 The effect of increases in PM, CO, or DPM (cancer and non-cancer-risk) in excess of applicable air
 21 district thresholds (Table 22-8) at receptor locations could result in adverse health impacts.
 22 Mitigation Measures AQ-24 and AQ-25 would be available to reduce this effect.

23 **CEQA Conclusion:** Construction and operational emissions associated with the restoration and
 24 enhancement actions under Alternative 5 would result in a significant impact if PM, CO, or DPM
 25 (cancer and non-cancer-risk) concentrations at receptor locations exceed the applicable local air
 26 district thresholds shown in Table 22-8; these effects are expected to be further evaluated and
 27 identified in the subsequent project-level environmental analysis conducted for the CM2–CM11
 28 restoration and enhancement actions. Mitigation Measures AQ-24 and AQ-25 would ensure localized
 29 concentrations at receptor locations would be below applicable air quality management district
 30 thresholds (see Table 22-8). Consequently, this impact would be less than significant.

31 **Mitigation Measure AQ-24: Develop an Air Quality Mitigation Plan (AQMP) to Ensure Air**
 32 **District Regulations and Recommended Mitigation are Incorporated into Future**
 33 **Conservation Measures and Associated Project Activities**

34 Please see Mitigation Measure AQ-24 under Impact AQ-24 in the discussion of Alternative 1A.

35 **Mitigation Measure AQ-25: Prepare a Project-Level Health Risk Assessment to Reduce**
 36 **Potential Health Risks from Exposure to Localized DPM and PM Concentrations**

37 Please see Mitigation Measure AQ-25 under Impact AQ-25 in the discussion of Alternative 1A.

1 **Impact AQ-26: Creation of Potential Odors Affecting a Substantial Number of People from**
 2 **Implementation of CM2–CM11**

3 **NEPA Effects:** The potential for Alternative 5 to expose sensitive receptors increased odors would
 4 be similar to Alternative 1A. Accordingly, construction activities associated with CM2-CM11 are not
 5 anticipated to result in nuisance odors. Similarly, while restored land uses associated with the
 6 program have the potential to generate odors from natural processes, the emissions would be
 7 similar in origin and magnitude to the existing land use types in the restored area (e.g., managed
 8 wetlands). Moreover, specific odor effects would be evaluated and identified in the subsequent
 9 project-level environmental analysis conducted for the CM2–CM11 restoration and enhancement
 10 actions. Accordingly, odor-related effects associated with CM2–CM11 would not be adverse.

11 **CEQA Conclusion:** Alternative 5 would not result in the addition of major odor producing facilities.
 12 Diesel emissions during construction could generate temporary odors, but these would quickly
 13 dissipate and cease once construction is completed. Increases in wetland, tidal, and upland habitats
 14 may increase the potential for odors from natural processes. However, the origin and magnitude of
 15 odors would be similar to the existing land use types in the restored area (e.g., managed wetlands).
 16 Moreover, specific odor impacts would be evaluated and identified in the subsequent project-level
 17 environmental analysis conducted for the CM2–CM11 restoration and enhancement actions.
 18 Accordingly, the impact of exposure of sensitive receptors to potential odors would be less than
 19 significant. No mitigation is required.

20 **Impact AQ-27: Generation of Cumulative Greenhouse Gas Emissions from Implementation of**
 21 **CM2–CM11**

22 **NEPA Effects:** CM2–CM11 implemented under Alternative 5 would result in local GHG emissions
 23 from construction equipment and vehicle exhaust, similar to Alternative 1A. Restoration activities
 24 with the greatest potential for emissions include those that break ground and require use of
 25 earthmoving equipment. The type of restoration action and related construction equipment use are
 26 shown in Table 22-29. Implementing CM2–CM11 would also affect long-term sequestration rates
 27 through land use changes, such as conversion of agricultural land to wetlands, inundation of peat
 28 soils, drainage of peat soils, and removal or planting of carbon-sequestering plants.

29 Without additional information on site-specific characteristics associated with each of the
 30 restoration components, a complete assessment of GHG flux from CM2–CM11 is currently not
 31 possible. The effect of carbon sequestration and CH₄ generation would vary by land use type, season,
 32 and chemical and biological characteristics; these effects would be evaluated and identified in the
 33 subsequent project-level environmental analysis conducted for the CM2–CM11 restoration and
 34 enhancement actions. Mitigation Measures AQ-24 and AQ-27 would be available to reduce this
 35 effect. However, due to the potential for increases in GHG emissions from construction and land use
 36 change, this effect would be adverse.

37 **CEQA Conclusion:** The restoration and enhancement actions under Alternative 5 could result in a
 38 significant impact if activities are inconsistent with applicable GHG reduction plans, do not
 39 contribute to a lower carbon future, or generate excessive emissions, relative to other projects
 40 throughout the state. These effects are expected to be further evaluated and identified in the
 41 subsequent project-level environmental analysis conducted for the CM2–CM11 restoration and
 42 enhancement actions. Mitigation Measures AQ-25 and AQ-27 would be available to reduce this
 43 impact, but may not be sufficient to reduce to a less-than-significant level. Consequently, this impact
 44 would be significant and unavoidable.

1 **Mitigation Measure AQ-25: Develop an Air Quality Mitigation Plan (AQMP) to Ensure Air**
 2 **District Regulations and Recommended Mitigation are Incorporated into Future**
 3 **Conservation Measures and Associated Project Activities**

4 Please see Mitigation Measure AQ-25 under Impact AQ-25 in the discussion of Alternative 1A.

5 **Mitigation Measure AQ-27: Prepare a Land Use Sequestration Analysis to Quantify and**
 6 **Mitigate (as Needed) GHG Flux Associated with Conservation Measures and Associated**
 7 **Project Activities**

8 Please see Mitigation Measure AQ-27 under Impact AQ-27 in the discussion of Alternative 1A.

9 **22.3.3.11 Alternative 6A—Isolated Conveyance with Pipeline/Tunnel and**
 10 **Intakes 1–5 (15,000 cfs; Operational Scenario D)**

11 A total of five intakes would be constructed under Alternative 6A. For the purposes of this analysis,
 12 it was assumed that Intakes 1–5 (on the east bank of the Sacramento River) would be constructed
 13 under Alternative 6A. Under this alternative, an intermediate forebay would also be constructed,
 14 and the conveyance facility would be a buried pipeline and tunnels (Figures 3-2 and 3-13 in Chapter
 15 3, *Description of Alternatives*).

16 Construction and operation of Alternative 6A would require the use of electricity, which would be
 17 supplied by the California electrical grid. Power plants located throughout the state supply the grid
 18 with power, which will be distributed to the Study area to meet project demand. Power supplied by
 19 statewide power plants will generate criteria pollutants. Because these power plants are located
 20 throughout the state, criteria pollutant emissions associated with Alternative 6A electricity demand
 21 cannot be ascribed to a specific air basin or air district within the Study area. Criteria pollutant
 22 emissions from electricity consumption are therefore provided for informational purposes only and
 23 are not included in the impact conclusion.

24 Construction activity required for Alternative 6A was assumed to equal activity required for
 25 Alternative 1A. Construction emissions generated by Alternative 1A would therefore be
 26 representative of emissions generated by Alternative 6A. Refer to Table 22-11 for a summary of
 27 criteria pollutants during construction (years 2016 through 2029) of Alternative 1A that are
 28 applicable to this alternative. Operational emissions would be different from Alternative 1A and are
 29 provided in Table 22-124. Negative values represent an emissions benefit, relative to the No Action
 30 Alternative or Existing Conditions.

1 **Table 22-124. Criteria Pollutant Emissions from Electricity Consumption: Net Project Operations,**
 2 **Alternative 6A (tons/year)^{a,b}**

Year	Analysis	ROG	CO	NO _x	PM10	PM2.5 ^c	SO ₂
ELT	CEQA	-1	-14	-189	-16	-16	-80
LLT	NEPA	-1	-7	-95	-8	-8	-40
LLT	CEQA	-2	-19	-260	-22	-22	-110

NEPA = Compares criteria pollutant emissions after implementation of Alternative 6A to the No Action Alternative.

CEQA = Compares criteria pollutant emissions after implementation of Alternative 6A to Existing Conditions.

^a Emissions assume implementation of RPS (see Appendix 22A, *Air Quality Analysis Methodology*). Power plants that generate electricity for the proposed project would be subject to local air district permitting requirements, including standards to implement BACT to reduce criteria pollutant emissions.

^b Because GHG emissions are cumulative (see Section 22.3.2.1) and not evaluated at the local air basin or air district level, they are discussed in Impacts AQ-21 and AQ-22. The GHG analysis for SWP power utilizes actual and forecasted GHG emissions rates for the SWP system, which differs slightly from the above analysis. Statewide grid average emission factors were utilized for the above analysis as criteria pollutant emission factors for SWP were unavailable. Please also note that the above analysis does not account for additional renewable energy that will be procured through modifications to DWR's REPP (see Impact AQ-22). Accordingly, the emissions results presented above represent a conservative assessment of potential criteria pollutant emissions.

^c Emission factors for PM2.5 are currently unavailable. Consequently, PM2.5 emissions were assumed to equal PM10 emissions. Because PM2.5 represents a fraction of PM10, this approach represents a conservative assessment of PM2.5 emissions from electricity consumption.

3
 4 **Impact AQ-1: Generation of Criteria Pollutants in Excess of the SMAQMD Regional Thresholds**
 5 **during Construction of the Proposed Water Conveyance Facility**

6 **NEPA Effects:** Construction activity required for Alternative 6A was assumed to equal activity
 7 required for Alternative 1A. Emissions generated by Alternative 1A would therefore be
 8 representative of emissions generated by Alternative 6A. As shown in Table 22-12, emissions would
 9 exceed SMAQMD's daily NO_x threshold, even with implementation of environmental commitments.
 10 Since NO_x is a precursor to ozone and PM, exceedances of SMAQMD's daily NO_x threshold could
 11 impact both regional ozone and PM formation, which could worsen regional air quality and air basin
 12 attainment of the NAAQS and CAAQS.

13 While equipment could operate at any work area identified for this alternative, the highest level of
 14 NO_x and fugitive dust emissions in the SMAQMD are expected to occur at those sites where the
 15 duration and intensity of construction activities would be greatest. This includes all intake and
 16 intake pumping plant sites along the east bank of the Sacramento River, as well as the intermediate
 17 forebay (and pumping plant) site west of South Stone Lake and east of the Sacramento River. See the
 18 discussion of Impact AQ-1 under Alternative 1A.

19 Environmental commitments will reduce construction-related emissions; however, as shown in
 20 Table 22-12, NO_x emissions would still exceed the air district threshold identified in Table 22-8 and
 21 would result in an adverse effect to air quality. Mitigation Measures AQ-1a and AQ-1b would be
 22 available to reduce NO_x emissions, and would thus address regional effects related to secondary
 23 ozone and PM formation.

1 **CEQA Conclusion:** NO_x emissions generated during construction would exceed SMAQMD threshold
 2 identified in Table 22-8. Since NO_x is a precursor to ozone and PM, exceedances of SMAQMD's daily
 3 NO_x threshold could impact both regional ozone and PM formation. SMAQMD's regional emissions
 4 thresholds (Table 22-8) have been adopted to ensure projects do not hinder attainment of the
 5 CAAQS or NAAQS. The impact of generating NO_x emissions in excess of local air district thresholds
 6 would therefore violate applicable air quality standards in the Study area and could contribute to or
 7 worsen an existing air quality conditions. This would be a significant impact. Mitigation Measures
 8 AQ-1a and AQ-1b would be available to reduce NO_x emissions to a less-than-significant level by
 9 offsetting emissions to quantities below SMAQMD CEQA thresholds (see Table 22-8).

10 **Mitigation Measure AQ-1a: Mitigate and Offset Construction-Generated Criteria Pollutant**
 11 **Emissions within the SFNA to Net Zero (0) for Emissions in Excess of General Conformity**
 12 ***De Minimis* Thresholds (Where Applicable) and to Quantities below Applicable CEQA**
 13 **Thresholds for Other Pollutants**

14 Please see Mitigation Measure AQ-1a under Impact AQ-1 in the discussion of Alternative 1A.

15 **Mitigation Measure AQ-1b: Develop an Alternative or Complementary Offsite Mitigation**
 16 **Program to Mitigate and Offset Construction-Generated Criteria Pollutant Emissions**
 17 **within the SFNA to Net Zero (0) for Emissions in Excess of General Conformity *De Minimis***
 18 **Thresholds (Where Applicable) and to Quantities below Applicable CEQA Thresholds for**
 19 **Other Pollutants**

20 Please see Mitigation Measure AQ-1b under Impact AQ-1 in the discussion of Alternative 1A.

21 **Impact AQ-2: Generation of Criteria Pollutants in Excess of the YSAQMD Regional Thresholds**
 22 **during Construction of the Proposed Water Conveyance Facility**

23 **NEPA Effects:** Construction activity required for Alternative 6A within the YSAQMD was assumed to
 24 equal activity required for Alternative 1A. Emissions generated by Alternative 1A would therefore
 25 be representative of emissions generated by Alternative 6A. As shown in Table 22-12, emissions
 26 would exceed YSAQMD's NO_x and PM₁₀ thresholds, even with implementation of environmental
 27 commitments (see Appendix 3B, *Environmental Commitments*).

28 Since NO_x is a precursor to ozone and PM, exceedances of SMAQMD's daily NO_x threshold could
 29 impact both regional ozone and PM formation, which could worsen regional air quality and air basin
 30 attainment of the NAAQS and CAAQS. Similarly, exceedances of YSAQMD's PM₁₀ threshold could
 31 impede attainment of the NAAQS and CAAQS for PM₁₀. All emissions generated within YSAQMD are
 32 a result of haul truck movement for equipment and material delivery.

33 Environmental commitments outlined in Appendix 3B, *Environmental Commitments*, will reduce
 34 construction-related emissions; however, as shown in Table 22-12, NO_x and PM₁₀ emissions would
 35 still exceed the applicable YSAQMD thresholds identified in Table 22-8 and result in an adverse
 36 regional effect to air quality. Mitigation Measures AQ-1a and AQ-1b are available to reduce NO_x and
 37 PM₁₀ emissions, and would thus address regional effects related to secondary ozone and PM
 38 formation.

39 **CEQA Conclusion:** Emissions of NO_x and PM₁₀ generated during construction would exceed
 40 YSAQMD's regional thresholds identified in Table 22-8. Since NO_x is a precursor to ozone and NO_x is
 41 a precursor to PM, exceedances of YSAQMD's NO_x threshold could impact both regional ozone and

1 PM formation, which could worsen regional air quality and air basin attainment of the NAAQS and
 2 CAAQS. Similarly, exceedances of YSAQMD's PM10 threshold could impede attainment of the NAAQS
 3 and CAAQS for PM10. YSAQMD's regional emissions thresholds (Table 22-8) have been adopted to
 4 ensure projects do not hinder attainment of the CAAQS or NAAQS. The impact of generating NO_x and
 5 PM10 in excess of local air district regional thresholds would therefore violate applicable air quality
 6 standards in the study area and could contribute to or worsen an existing air quality conditions. This
 7 would be a significant impact. Mitigation Measures AQ-1a and AQ-1b would be available to reduce
 8 NO_x and PM10 emissions to a less-than-significant level by offsetting emissions to quantities below
 9 YSAQMD CEQA thresholds (see Table 22-8).

10 **Mitigation Measure AQ-1a: Mitigate and Offset Construction-Generated Criteria Pollutant**
 11 **Emissions within the SFNA to Net Zero (0) for Emissions in Excess of General Conformity**
 12 ***De Minimis* Thresholds (Where Applicable) and to Quantities below Applicable CEQA**
 13 **Thresholds for Other Pollutants**

14 Please see Mitigation Measure AQ-1a under Impact AQ-1 in the discussion of Alternative 1A.

15 **Mitigation Measure AQ-1b: Develop an Alternative or Complementary Offsite Mitigation**
 16 **Program to Mitigate and Offset Construction-Generated Criteria Pollutant Emissions**
 17 **within the SFNA to Net Zero (0) for Emissions in Excess of General Conformity *De Minimis***
 18 **Thresholds (Where Applicable) and to Quantities below Applicable CEQA Thresholds for**
 19 **Other Pollutants**

20 Please see Mitigation Measure AQ-1b under Impact AQ-1 in the discussion of Alternative 1A.

21 **Impact AQ-3: Generation of Criteria Pollutants in Excess of the BAAQMD Regional Thresholds**
 22 **during Construction of the Proposed Water Conveyance Facility**

23 ***NEPA Effects:*** Construction activity required for Alternative 6A was assumed to equal activity
 24 required for Alternative 1A. Emissions generated by Alternative 1A would therefore be
 25 representative of emissions generated by Alternative 6A. As shown in Table 22-12, emissions would
 26 exceed BAAQMD's daily thresholds for ROG and NO_x, even with implementation of environmental
 27 commitments. All other pollutants would be below air district thresholds and therefore would not
 28 result in an adverse air quality effect.

29 Since ROG and NO_x are precursors to ozone and NO_x is a precursor to PM, exceedances of BAAQMD's
 30 ROG and NO_x thresholds could impact both regional ozone and PM formation, which could worsen
 31 regional air quality and air basin attainment of the NAAQS and CAAQS.

32 While equipment could operate at any work area identified for this alternative, the highest level of
 33 ROG and NO_x emissions in the BAAQMD are expected to occur at those sites where the duration and
 34 intensity of construction activities would be greatest, including the site of the Byron Tract Forebay
 35 adjacent to and south of Clifton Court Forebay.

36 Environmental commitments outlined in Appendix 3B, *Environmental Commitments*, will reduce
 37 construction-related emissions; however, as shown in Table 22-12, ROG and NO_x emissions would
 38 still exceed the applicable air district thresholds identified in Table 22-8 and would result in an
 39 adverse effect to air quality. Mitigation Measures AQ-3a and AQ-3b would be available to address
 40 this effect.

1 **CEQA Conclusion:** Emissions of ROG and NO_x precursors generated during construction would
 2 exceed BAAQMD thresholds identified in Table 22-8. Since ROG and NO_x are precursors to ozone
 3 and NO_x is a precursor to PM, exceedances of BAAQMD's ROG and NO_x thresholds could impact both
 4 regional ozone and PM formation. BAAQMD's regional emissions thresholds (Table 22-8) have been
 5 adopted to ensure projects do not hinder attainment of the CAAQS or NAAQS. The impact of
 6 generating ROG and NO_x emissions in excess of local air district thresholds would therefore violate
 7 applicable air quality standards in the Study area and could contribute to or worsen an existing air
 8 quality conditions. This would be a significant impact. Mitigation Measures AQ-3a and AQ-3b would
 9 be available to reduce ROG and NO_x emissions to a less-than-significant level by offsetting emissions
 10 to quantities below BAAQMD CEQA thresholds (see Table 22-8).

11 **Mitigation Measure AQ-3a: Mitigate and Offset Construction-Generated Criteria Pollutant**
 12 **Emissions within BAAQMD/SFBAAB to Net Zero (0) for Emissions in Excess of General**
 13 **Conformity *De Minimis* Thresholds (Where Applicable) and to Quantities below**
 14 **Applicable BAAQMD CEQA Thresholds for Other Pollutants**

15 Please see Mitigation Measure AQ-3a under Impact AQ-3 in the discussion of Alternative 1A.

16 **Mitigation Measure AQ-3b: Develop an Alternative or Complementary Offsite Mitigation**
 17 **Program to Mitigate and Offset Construction-Generated Criteria Pollutant Emissions**
 18 **within the BAAQMD/SFBAAB to Net Zero (0) for Emissions in Excess of General**
 19 **Conformity *De Minimis* Thresholds (Where Applicable) and to Quantities below**
 20 **Applicable BAAQMD CEQA Thresholds for Other Pollutants**

21 Please see Mitigation Measure AQ-3b under Impact AQ-3 in the discussion of Alternative 1A.

22 **Impact AQ-4: Generation of Criteria Pollutants in Excess of the SJVAPCD Regional Thresholds**
 23 **during Construction of the Proposed Water Conveyance Facility**

24 **NEPA Effects:** Construction activity required for Alternative 6A was assumed to equal activity
 25 required for Alternative 1A. Emissions generated by Alternative 1A would therefore be
 26 representative of emissions generated by Alternative 6A. As shown in Table 22-12, emissions would
 27 exceed SJVAPCD's ROG, NO_x, and PM₁₀ thresholds, even with implementation of environmental
 28 commitments. All other pollutants would be below air district thresholds and therefore would not
 29 result in an adverse air quality effect.

30 Since ROG and NO_x are precursors to ozone and NO_x is a precursor to PM, exceedances of SJVAPCD's
 31 ROG and NO_x thresholds could impact both regional ozone and PM formation, which could worsen
 32 regional air quality and air basin attainment of the NAAQS and CAAQS. Similarly, exceedances of
 33 SJVAPCD's PM₁₀ threshold could impede attainment of the NAAQS and CAAQS for PM₁₀.

34 While equipment could operate at any work area identified for this alternative, the highest level of
 35 NO_x, and PM₁₀ emissions in the SJVAPCD is expected to occur at those sites where the duration and
 36 intensity of construction activities would be greatest. This includes all temporary and permanent
 37 utility sites, as well as all construction sites along the pipeline/tunnel conveyance alignment. For a
 38 map of the proposed tunnel alignment, see Mapbook Figure M3-1.

39 Environmental commitments outlined in Appendix 3B, *Environmental Commitments*, will reduce
 40 construction-related emissions; however, as shown in Table 22-12, NO_x, and PM₁₀ emissions would
 41 still exceed the applicable air district thresholds identified in Table 22-8 and would result in an

1 adverse effect to air quality. Mitigation Measures AQ-4a and AQ-4b are available to reduce ROG, NO_x,
2 and PM10 emissions, and would thus address regional effects related to secondary ozone and PM
3 formation.

4 **CEQA Conclusion:** Emissions of ROG, NO_x, and PM10 generated during construction would regional
5 SJVAPCD's annual significance threshold identified in Table 22-8. Since ROG and NO_x are precursors
6 to ozone and NO_x is a precursor to PM, exceedances of SJVAPCD's ROG and NO_x thresholds could
7 impact both regional ozone and PM formation, which could worsen regional air quality and air basin
8 attainment of the NAAQS and CAAQS. Similarly, exceedances of SJVAPCD's PM10 threshold could
9 impede attainment of the NAAQS and CAAQS for PM10. SJVAPCD's regional emissions thresholds
10 (Table 22-8) have been adopted to ensure projects do not hinder attainment of the CAAQS or
11 NAAQS. The impact of generating ROG, NO_x, and PM10 emissions in excess of local air district
12 thresholds would therefore violate applicable air quality standards in the Study area and could
13 contribute to or worsen an existing air quality conditions. This would be a significant impact.
14 Mitigation Measures AQ-4a and AQ-4b would be available to reduce ROG, NO_x, and PM10 emissions
15 to a less-than-significant level by offsetting emissions to quantities below SJVAPCD CEQA thresholds
16 (see Table 22-8).

17 **Mitigation Measure AQ-4a: Mitigate and Offset Construction-Generated Criteria Pollutant**
18 **Emissions within SJVAPCD/SJVAB to Net Zero (0) for Emissions in Excess of General**
19 **Conformity *De Minimis* Thresholds (Where Applicable) and to Quantities below**
20 **Applicable SJVAPCD CEQA Thresholds for Other Pollutants**

21 Please see Mitigation Measure AQ-4a under Impact AQ-4 in the discussion of Alternative 1A.

22 **Mitigation Measure AQ-4b: Develop an Alternative or Complementary Offsite Mitigation**
23 **Program to Mitigate and Offset Construction-Generated Criteria Pollutant Emissions**
24 **within the SJVAPCD/SJVAB to Net Zero (0) for Emissions in Excess of General Conformity**
25 ***De Minimis* Thresholds (Where Applicable) and to Quantities below Applicable SJVAPCD**
26 **CEQA Thresholds for Other Pollutants**

27 Please see Mitigation Measure AQ-4b under Impact AQ-4 in the discussion of Alternative 1A.

28 **Impact AQ-5: Generation of Criteria Pollutants in Excess of the SMAQMD Regional Thresholds**
29 **from Operation and Maintenance of the Proposed Water Conveyance Facility**

30 **NEPA Effects:** Operations and maintenance activities in SMAQMD required for Alternative 6A were
31 assumed to equal activities required for Alternative 1A. Emissions generated by Alternative 1A
32 would therefore be representative of emissions generated by Alternative 6A. As shown in Table 22-
33 13, emissions would not exceed SMAQMD's regional thresholds of significance and there would be
34 no adverse effect. See the discussion of Impact AQ-5 under Alternative 1A.

35 **CEQA Conclusion:** Emissions generated during operation and maintenance activities would not
36 exceed SMAQMD regional thresholds for criteria pollutants. SMAQMD's regional emissions
37 thresholds (Table 22-8) have been adopted to ensure projects do not hinder attainment of the
38 CAAQS or NAAQS. The impact of generating emissions in excess of local air district would therefore
39 violate applicable air quality standards in the Study area and could contribute to or worsen an
40 existing air quality conditions. Because project operations would not exceed SMAQMD regional
41 thresholds, the impact would be less than significant. No mitigation is required.

1 **Impact AQ-6: Generation of Criteria Pollutants in Excess of the YSAQMD Regional Thresholds**
 2 **from Operation and Maintenance of the Proposed Water Conveyance Facility**

3 *NEPA Effects:* Alternative 6A would not involve the construction of any permanent features in the
 4 YSAQMD that would require routine operations and maintenance. No operational emissions would
 5 be generated in the YSAQMD. Consequently, operation of Alternative 6A would neither exceed the
 6 YSAQMD thresholds of significance nor result in an adverse effect on air quality.

7 *CEQA Conclusion:* No operational or maintenance emissions generated by the alternative would
 8 occur in YSAQMD and, therefore, YSAQMD's regional thresholds would not be exceeded (see Table
 9 22-8). This impact would be less than significant. No mitigation is required.

10 **Impact AQ-7: Generation of Criteria Pollutants in Excess of the BAAQMD Regional Thresholds**
 11 **from Operation and Maintenance of the Proposed Water Conveyance Facility**

12 *NEPA Effects:* Operations and maintenance activities in BAAQMD required for Alternative 6A were
 13 assumed to equal activities required for Alternative 1A. Emissions generated by Alternative 1A
 14 would therefore be representative of emissions generated by Alternative 6A. As shown in Table 22-
 15 13, emissions would not exceed BAAQMD's regional thresholds of significance and there would be
 16 no adverse effect. See the discussion of Impact AQ-7 under Alternative 1A.

17 *CEQA Conclusion:* Emissions generated during operation and maintenance activities would not
 18 exceed BAAQMD thresholds for criteria pollutants. BAAQMD's regional emissions thresholds (Table
 19 22-8) have been adopted to ensure projects do not hinder attainment of the CAAQS or NAAQS. The
 20 impact of generating emissions in excess of local air district thresholds would violate applicable air
 21 quality standards in the Study area and could contribute to or worsen an existing air quality
 22 conditions. Because project operations would not exceed BAAQMD regional thresholds, the impact
 23 would be less than significant. No mitigation is required.

24 **Impact AQ-8: Generation of Criteria Pollutants in Excess of the SJVAPCD Regional Thresholds**
 25 **from Operation and Maintenance of the Proposed Water Conveyance Facility**

26 *NEPA Effects:* Operations and maintenance activities in SJVAPCD required for Alternative 6A were
 27 assumed to equal activities required for Alternative 1A. Emissions generated by Alternative 1A
 28 would therefore be representative of emissions generated by Alternative 6A. As shown in Table 22-
 29 13, emissions would not exceed SJVAPCD's regional thresholds of significance and there would be no
 30 adverse effect. See the discussion of Impact AQ-8 under Alternative 1A.

31 *CEQA Conclusion:* Emissions generated during operation and maintenance activities would not
 32 exceed SJVAPCD's thresholds of significance. SJVAPCD's regional emissions thresholds (Table 22-8)
 33 have been adopted to ensure projects do not hinder attainment of the CAAQS or NAAQS. The impact
 34 of generating emissions in excess of local air district thresholds would violate applicable air quality
 35 standards in the Study area and could contribute to or worsen an existing air quality conditions.
 36 Because project operations would not exceed SJVAPCD regional thresholds, the impact would be less
 37 than significant. No mitigation is required.

38 **Impact AQ-9: Exposure of Sensitive Receptors to Health Hazards from Localized Particulate**
 39 **Matter in Excess of SMAQMD's Health-Based Concentration Thresholds**

40 *NEPA Effects:* Construction activity required for Alternative 6A within the SMAQMD was assumed to
 41 equal activity required for Alternative 1A. Emissions and associated health risks from exposure to

1 localized PM under Alternative 1A would therefore be representative of emissions and health risks
2 generated by Alternative 6A.

3 As shown in Table 22-14, concentrations of annual PM10 and PM2.5 would be below the SMAQMD's
4 significance thresholds. However, concentrations of PM10 would exceed SMAQMD's 24-hour PM10
5 threshold, even with implementation of environmental commitments (see Appendix 3B,
6 *Environmental Commitments*). Receptors exposed to PM10 concentrations in excess of SMAQMD's
7 threshold could experience increased risk for adverse human health effects. Mitigation Measure AQ-
8 9 is available to address this effect.

9 **CEQA Conclusion:** Respirable particulates pose a human health hazard by bypassing the defenses
10 within the mucous ciliary system and entering deep lung tissue. Construction of Alternative 6A
11 would result in the short-term exposure of receptors to PM10 concentrations that exceed SMAQMD
12 threshold. This would be a significant impact. Mitigation Measure AQ-9 outlines a tiered strategy to
13 reduce PM10 concentrations and public exposure to a less-than-significant level.

14 **Mitigation Measure AQ-9: Implement Measures to Reduce Re-Entrained Road Dust and**
15 **Receptor Exposure to PM2.5 and PM10**

16 Please see Mitigation Measure AQ-9 under Impact AQ-9 in the discussion of Alternative 1A.

17 **Impact AQ-10: Exposure of Sensitive Receptors to Health Hazards from Localized Particulate**
18 **Matter in Excess of YSAQMD's Health-Based Concentration Thresholds**

19 **NEPA Effects:** Construction activity required for Alternative 6A within the YSAQMD was assumed to
20 equal activity required for Alternative 1A. Emissions and associated health risks from exposure to
21 localized PM under Alternative 1A would therefore be representative of emissions and health risks
22 generated by Alternative 6A. As shown previously in Table 22-15, concentrations of particulate
23 matter would not exceed YSAQMD's 24-hour and annual PM10 and PM2.5 thresholds and
24 consequently would not result in an adverse effect to human health.

25 **CEQA Conclusion:** Respirable particulates pose a human health hazard by bypassing the defenses
26 within the mucous ciliary system and entering deep lung tissue. Construction of Alternative 6A
27 would result in PM2.5 and PM10 concentrations at receptor locations that are below the significance
28 thresholds established by the YSAQMD. As such, localized particulate matter concentrations at
29 analyzed receptors would not result in significant human health impacts. No mitigation is required.

30 **Impact AQ-11: Exposure of Sensitive Receptors to Health Hazards from Localized Particulate**
31 **Matter in Excess of BAAQMD's Health-Based Concentration Thresholds**

32 **NEPA Effects:** Construction activity required for Alternative 6A within the BAAQMD was assumed to
33 equal activity required for Alternative 1A. Emissions and associated health risks from exposure to
34 localized PM under Alternative 1A would therefore be representative of emissions and health risks
35 generated by Alternative 6A. As shown in Table 22-16, concentrations of particulate matter would
36 not exceed BAAQMD's annual PM2.5 threshold and consequently would not result in an adverse
37 effect to human health.

38 **CEQA Conclusion:** Respirable particulates pose a human health hazard by bypassing the defenses
39 within the mucous ciliary system and entering deep lung tissue. Construction of Alternative 6A
40 would result in PM2.5 concentrations at receptor locations that are below the significance

1 thresholds established by the BAAQMD. As such, localized particulate matter concentrations at
2 analyzed receptors would not result in significant human health impacts. No mitigation is required.

3 **Impact AQ-12: Exposure of Sensitive Receptors to Health Hazards from Localized Particulate** 4 **Matter in Excess of SJVAPCD's Health-Based Concentration Thresholds**

5 **NEPA Effects:** Construction activity required for Alternative 6A within the SJVAPCD was assumed to
6 equal activity required for Alternative 1A. Emissions and associated health risks from exposure to
7 localized PM under Alternative 1A would therefore be representative of emissions and health risks
8 generated by Alternative 6A.

9 As shown in Table 22-17, with the exception of 24-hour PM10, maximum predicted PM2.5 and
10 PM10 concentrations are less than SJVAPCD's adopted thresholds. Concentrations of PM10 would
11 exceed SJVAPCD's 24-hour PM10 threshold, even with implementation of environmental
12 commitments (see Appendix 3B, *Environmental Commitments*). Receptors exposed to PM10
13 concentrations in excess of SMAQMD's threshold could experience increased risk for adverse human
14 health effects. Mitigation Measure AQ-9 is available to address this effect.

15 **CEQA Conclusion:** Respirable particulates pose a human health hazard by bypassing the defenses
16 within the mucous ciliary system and entering deep lung tissue. Construction of Alternative 6A
17 would result in the short-term exposure of receptors to PM10 concentrations that exceed SJVAPCD
18 threshold. This would be a significant impact. Mitigation Measure AQ-9 outlines a tiered strategy to
19 reduce PM10 concentrations and public exposure to a less-than-significant level.

20 **Mitigation Measure AQ-9: Implement Measures to Reduce Re-Entrained Road Dust and** 21 **Receptor Exposure to PM2.5 and PM10**

22 Please see Mitigation Measure AQ-9 under Impact AQ-9 in the discussion of Alternative 1A.

23 **Impact AQ-13: Exposure of Sensitive Receptors to Health Hazards from Localized Carbon** 24 **Monoxide**

25 **NEPA Effects:** Construction activity required for Alternative 6A would be similar to activity required
26 for Alternative 1A. Accordingly, the potential for Alternative 6A to result in CO hot-spots during
27 construction would be the same as Alternative 6A. Given that construction activities typically do not
28 result in CO hot-spots, onsite concentrations must comply with OSHA standards, and CO levels
29 dissipate as a function of distance, equipment-generated CO emissions (see Table 22-12) are not
30 anticipated to result in adverse health hazards to sensitive receptors. Refer to Impact AQ-13 under
31 Alternative 1A.

32 Traffic associated with construction may contribute to increase roadway congestion, which could
33 lead to conditions conducive to CO hot-spot formation. As shown in Table 19-8, the highest peak
34 hour traffic volumes under BPBGPP—12,567 vehicles per hour—would occur on westbound
35 Interstate 80 between Suisun Valley Road and State Route 12. This is about half of the congested
36 traffic volume modeled by BAAQMD (24,000 vehicles per hour) that would be needed to contribute
37 to a localized CO hot-spot, and less than half of the traffic volume modeled by SMAQMD (31,600
38 vehicles per hour). Accordingly, construction traffic is not anticipated to result in adverse health
39 hazards to sensitive receptors.

40 **CEQA Conclusion:** Continuous engine exhaust may elevate localized CO concentrations. Receptors
41 exposed to these CO "hot-spots" may have a greater likelihood of developing adverse health effects.

1 Construction sites are less likely to result in localized CO hot-spots due to the nature of construction
 2 activities (Sacramento Metropolitan Air Quality Management District 2014), which normally utilize
 3 diesel-powered equipment for intermittent or short durations. Moreover, construction sites must
 4 comply with the OSHA CO exposure standards for onsite workers. Accordingly, given that
 5 construction activities typically do not result in CO hot-spots, onsite concentrations must comply
 6 with OSHA standards, and CO levels dissipate as a function of distance, equipment-generated CO
 7 emissions are not anticipated to result in significant health hazards to sensitive receptors. Similarly,
 8 peak-hour construction traffic on local roadways would not exceed BAAQMD's or SMAQMD's
 9 conservative screening criteria for the formation potential CO hot-spots. This impact would be less
 10 than significant. No mitigation is required.

11 **Impact AQ-14: Exposure of Sensitive Receptors to Health Hazards from Diesel Particulate**
 12 **Matter in Excess of SMAQMD's Chronic Non-Cancer and Cancer Risk Thresholds**

13 *NEPA Effects:* Construction activity required for Alternative 6A within the SMAQMD was assumed to
 14 equal activity required for Alternative 1A. Emissions and associated health risks from exposure to
 15 localized DPM under Alternative 1A would therefore be representative of emissions and health risks
 16 generated by Alternative 6A. As shown in Table 22-18, Alternative 1A would not exceed the
 17 SMAQMD's thresholds for chronic non-cancer hazard or cancer risk. Therefore, this alternative's
 18 effect of exposure of sensitive receptors to DPM emissions and their health hazards during
 19 construction would not be adverse.

20 *CEQA Conclusion:* DPM generated during construction poses inhalation-related chronic non-cancer
 21 hazard and cancer risk if adjacent receptors are exposed to significant concentrations for prolonged
 22 durations. The DPM generated during Alternative 6A construction would not exceed the SMAQMD's
 23 chronic non-cancer hazard or cancer risk threshold. Therefore, this impact would be less than
 24 significant. No mitigation is required.

25 **Impact AQ-15: Exposure of Sensitive Receptors to Health Hazards from Diesel Particulate**
 26 **Matter in Excess of YSAQMD's Chronic Non-Cancer and Cancer Risk Thresholds**

27 *NEPA Effects:* Construction activity required for Alternative 6A within the YSAQMD was assumed to
 28 equal activity required for Alternative 1A. Emissions and associated health risks from exposure to
 29 localized DPM under Alternative 1A would therefore be representative of emissions and health risks
 30 generated by Alternative 6A. As shown in Table 22-19, Alternative 1A would not exceed the
 31 YSAQMD's chronic non-cancer or cancer thresholds and, thus, would not expose sensitive receptors
 32 to substantial pollutant concentrations. Therefore, this alternative's effect of exposure of sensitive
 33 receptors to DPM emissions and their health hazards during construction would not be adverse.

34 *CEQA Conclusion:* DPM generated during construction poses inhalation-related chronic non-cancer
 35 hazard and cancer risk if adjacent receptors are exposed to significant concentrations for prolonged
 36 durations. The DPM generated during Alternative 6A construction would not exceed the YSAQMD's
 37 chronic non-cancer or cancer thresholds, and thus would not expose sensitive receptors to
 38 substantial pollutant concentrations. Therefore, this impact for DPM emissions would be less than
 39 significant. No mitigation is required.

1 **Impact AQ-16: Exposure of Sensitive Receptors to Health Hazards from Diesel Particulate**
 2 **Matter in Excess of BAAQMD's Chronic Non-Cancer and Cancer Risk Thresholds**

3 **NEPA Effects:** Construction activity required for Alternative 6A within the BAAQMD was assumed to
 4 equal activity required for Alternative 1A. Emissions and associated health risks from exposure to
 5 localized DPM under Alternative 1A would therefore be representative of emissions and health risks
 6 generated by Alternative 6A. As shown in Table 22-20, Alternative 1A would not exceed the
 7 BAAQMD's thresholds for chronic non-cancer hazard; however, it would exceed BAAQMD's cancer
 8 risk threshold. Therefore, this alternative's effect of exposure of sensitive receptors to DPM-related
 9 health hazards during construction would be adverse.

10 Mitigation Measure AQ-16 would be available to reduce exposure to substantial cancer risk by
 11 relocating affected receptors. Although Mitigation Measure AQ-16 would reduce the severity of this
 12 effect, the BDCP proponents are not solely responsible for implementation of the measure. If a
 13 landowner chooses not to accept DWR's offer of relocation assistance, an adverse effect in the form
 14 excess cancer risk above air district thresholds would occur. Therefore, this effect would be adverse.
 15 If, however, all landowners accept DWR's offer of relocation assistance, effects would not be
 16 adverse.

17 **CEQA Conclusion:** DPM generated during construction poses inhalation-related chronic non-cancer
 18 hazard and cancer risk if adjacent receptors are exposed to significant concentrations for prolonged
 19 durations. The DPM generated during Alternative 6A construction would not exceed the BAAQMD's
 20 chronic non-cancer hazard threshold; however, it would exceed the BAAQMD's cancer thresholds.
 21 Therefore, this impact would be significant.

22 Mitigation Measure AQ-16 would be available to reduce exposure to substantial cancer risk by
 23 relocating affected receptors. Although Mitigation Measure AQ-16 would reduce the severity of this
 24 effect, the BDCP proponents are not solely responsible for implementation of the measure. If a
 25 landowner chooses not to accept DWR's offer of relocation assistance, a significant impact in the
 26 form excess cancer risk above air district thresholds would occur. Therefore, this effect would be
 27 significant and unavoidable. If, however, all landowners accept DWR's offer of relocation assistance,
 28 the impact would be less than significant.

29 **Mitigation Measure AQ-16: Relocate Sensitive Receptors to Avoid Excess Cancer Risk**

30 Please see Mitigation Measure AQ-16 under Impact AQ-16 in the discussion of Alternative 1A.

31 **Impact AQ-17: Exposure of Sensitive Receptors to Health Hazards from Diesel Particulate**
 32 **Matter in Excess of SJVAPCD's Chronic Non-Cancer and Cancer Risk Thresholds**

33 **NEPA Effects:** Construction activity required for Alternative 6A within the SJVAPCD was assumed to
 34 equal activity required for Alternative 1A. Emissions and associated health risks for Alternative 1A
 35 would therefore be representative of emissions and health risks generated by Alternative 6A. As
 36 shown in Table 22-21, Alternative 6A would not exceed the SJVAPCD's chronic non-cancer or cancer
 37 thresholds and, thus, would not expose sensitive receptors to substantial pollutant concentrations.
 38 Therefore, this alternative's effect of exposure of sensitive receptors to DPM emissions and their
 39 health hazards during construction would not be adverse.

40 **CEQA Conclusion:** DPM generated during construction poses inhalation-related chronic non-cancer
 41 hazard and cancer risk if adjacent receptors are exposed to significant concentrations for prolonged
 42 durations. The DPM generated during Alternative 6A construction would not exceed the SJVAPCD's

1 chronic non-cancer or cancer thresholds, and thus would not expose sensitive receptors to
 2 substantial pollutant concentrations. Therefore, this impact for DPM emissions would be less than
 3 significant. No mitigation is required.

4 **Impact AQ-18: Exposure of Sensitive Receptors to *Coccidioides immitis* (Valley Fever)**

5 **NEPA Effects:** As discussed under Alternative 1A, earthmoving activities during construction could
 6 release *C. immitis* spores if filaments are present and other soil chemistry and climatic conditions
 7 are conducive to spore development. Receptors adjacent to the construction area may therefore be
 8 exposed to increase risk of inhaling *C. immitis* spores and subsequent development of Valley Fever.
 9 Dust-control measures are the primary defense against infection (United States Geological Survey
 10 2000). Implementation of advanced air-district recommended fugitive dust controls outlined in
 11 Appendix 3B, *Environmental Commitments*, would avoid dusty conditions and reduce the risk of
 12 contracting Valley Fever through routine watering and other controls. Therefore, this alternative's
 13 effect of exposure of sensitive receptors to increased Valley Fever risk during construction would
 14 not be adverse.

15 **CEQA Conclusion:** Construction of the water conveyance facility would involve earthmoving
 16 activities that could release *C. immitis* spores if filaments are present and other soil chemistry and
 17 climatic conditions are conducive to spore development. Receptors adjacent to the construction area
 18 may therefore be exposed to increase risk of inhaling *C. immitis* spores and subsequent development
 19 of Valley Fever. Implementation of air-district recommended fugitive dust controls outlined in
 20 Appendix 3B, *Environmental Commitments*, would avoid dusty conditions and reduce the risk of
 21 contracting Valley Fever through routine watering and other controls. Therefore, this impact would
 22 be less than significant. No mitigation is required.

23 **Impact AQ-19: Creation of Potential Odors Affecting a Substantial Number of People during** 24 **Construction or Operation of the Proposed Water Conveyance Facility**

25 **NEPA Effects:** As discussed under Alternative 1A, odors from construction activities would be
 26 localized and generally confined to the immediate area surrounding the construction site. Moreover,
 27 odors would be temporary and localized, and they would cease once construction activities have
 28 been completed. Thus, it is not anticipated that construction of CM1 would create objectionable
 29 odors from construction equipment or asphalt paving.

30 Construction of the water conveyance facility would require removal of subsurface material during
 31 tunnel excavation and sediment removal. As discussed under Alternative 1A, geotechnical tests
 32 indicate that VOC levels in Plan Area soils are below the method detection limits, indicating that
 33 organic decay of exposed RTM and sediment will be relatively low (URS 2014). Moreover, drying
 34 and stockpiling of the removed RTM and sediment will occur under aerobic conditions, which will
 35 further limit any potential decomposition and associated malodorous products. Accordingly, it is not
 36 anticipated that tunnel and sediment excavation would create objectionable odors.

37 Typical facilities known to produce odors include landfills, wastewater treatment plants, food
 38 processing facilities, and certain agricultural activities. Alternative 6A would not result in the
 39 addition of facilities associated with odors, and as such, long-term operation of the water
 40 conveyance facility would not result in objectionable odors.

41 **CEQA Conclusion:** Alternative 6A would not result in the addition of major odor producing facilities.
 42 Diesel emissions during construction could generate temporary odors, but these would quickly

1 dissipate and cease once construction is completed. Likewise, potential odors generated during
 2 asphalt paving would be addressed through mandatory compliance with air district rules and
 3 regulations. While tunnel excavation would unearth substantial quantities of RTM, geotechnical
 4 tests indicate that soils in the Plan Area have relatively low organic constituents. Moreover, drying
 5 and stockpiling of the removed RTM will occur under aerobic conditions, which will further limit
 6 any potential decomposition and associated malodorous products. Accordingly, the impact of
 7 exposure of sensitive receptors to potential odors during construction would be less than
 8 significant. No mitigation is required.

9 **Impact AQ-20: Generation of Criteria Pollutants in the Excess of Federal *De Minimis***
 10 **Thresholds from Construction and Operation and Maintenance of the Proposed Water**
 11 **Conveyance Facility**

12 **NEPA Effects:** As discussed above, emissions generated by Alternative 1A within the SFNA, SJVAB,
 13 and SFBAAB would be representative of emissions generated by Alternative 6A (see Table 22-23).

14 **Sacramento Federal Nonattainment Area**

15 As shown in Table 22-23, implementation of Alternative 1A (and thus Alternative 6A), would exceed
 16 the following SFNA federal *de minimis* thresholds:

- 17 • ROG: 2023-2027
- 18 • NO_x: 2018-2028
- 19 • PM₁₀: 2023-2024

20 ROG and NO_x are precursors to ozone and NO_x is a precursor to PM, for which the SFNA is in
 21 nonattainment for the NAAQS. Sacramento County is also a maintenance area for the PM₁₀ NAAQS.
 22 Since project emissions exceed the federal *de minimis* thresholds for ROG, NO_x, and PM₁₀, a general
 23 conformity determination must be made to demonstrate that total direct and indirect emissions of
 24 ROG, NO_x, and PM₁₀ would conform to the appropriate SFNA SIP for each year of construction in
 25 which the *de minimis* thresholds are exceeded.

26 NO_x is also a precursor to PM and can contribute to PM formation. As discussed above, Sacramento
 27 County is currently designated maintenance for the PM₁₀ NAAQS and portions of the SVAB are
 28 designated nonattainment for the PM_{2.5} NAAQS. NO_x emissions in excess of 100 tons per year in
 29 Sacramento County trigger a secondary PM₁₀ precursor threshold, whereas NO_x emissions in excess
 30 of 100 tons per year in the SVAB trigger a secondary PM_{2.5} precursor threshold. Since NO_x
 31 emissions can contribute to PM formation, NO_x emissions in excess of these secondary precursor
 32 thresholds could conflict with the applicable PM₁₀ and PM_{2.5} SIPs. Accordingly, NO_x offsets pursued
 33 for the purposes of general conformity must for those years in which NO_x emissions exceed 100 tons
 34 occur within the federally designated PM_{2.5} nonattainment and PM₁₀ maintenance areas of the
 35 SVAB.

36 As shown in Table 22-12, NO_x emissions generated by construction activities in SMAQMD
 37 (Sacramento County) would exceed 100 tons per year between 2022 and 2027. The project
 38 therefore triggers the secondary PM₁₀ precursor threshold, requiring all NO_x offsets for 2022
 39 through 2027 to occur within Sacramento County. The project also triggers the secondary PM_{2.5}
 40 precursor threshold in 2021, requiring all NO_x offsets for 2021 to occur within the federally
 41 designated PM_{2.5} nonattainment area within the SFNA. The nonattainment boundary for PM_{2.5}
 42 includes all of Sacramento County and portions of Yolo, El Dorado, Solano, and Placer counties.

1 Given the magnitude of NO_x emissions and the limited geographic scope available for offsets in 2022
 2 through 2027 (Sacramento County), neither Mitigation Measures AQ-1a nor 1b could feasibly reduce
 3 NO_x emissions to net zero for the purposes of general conformity.⁵⁵ This impact would be adverse.
 4 In the event that Alternative 6A is selected as the APA, Reclamation, USFWS, and NMFS would need
 5 to demonstrate that conformity is met for NO_x and secondary PM₁₀ formation through a local air
 6 quality modeling analysis (i.e., dispersion modeling) or other acceptable methods to ensure project
 7 emissions do not cause or contribute to any new violations of the NAAQS or increase the frequency
 8 or severity of any existing violations.

9 **Mitigation Measure AQ-1a: Mitigate and Offset Construction-Generated Criteria Pollutant**
 10 **Emissions within the SFNA to Net Zero (0) for Emissions in Excess of General Conformity**
 11 ***De Minimis* Thresholds (Where Applicable) and to Quantities below Applicable CEQA**
 12 **Thresholds for Other Pollutants**

13 Please see Mitigation Measure AQ-1a under Impact AQ-1 in the discussion of Alternative 1A.

14 **Mitigation Measure AQ-1b: Develop an Alternative or Complementary Offsite Mitigation**
 15 **Program to Mitigate and Offset Construction-Generated Criteria Pollutant Emissions**
 16 **within the SFNA to Net Zero (0) for Emissions in Excess of General Conformity *De Minimis***
 17 **Thresholds (Where Applicable) and to Quantities below Applicable CEQA Thresholds for**
 18 **Other Pollutants**

19 Please see Mitigation Measure AQ-1b under Impact AQ-1 in the discussion of Alternative 1A.

20 ***San Joaquin Valley Air Basin***

21 As shown in Table 22-23, implementation of Alternative 1A (and thus Alternative 6A) would exceed
 22 the following SJVAB federal *de minimis* thresholds:

- 23 ● ROG: 2019–2025
- 24 ● NO_x: 2019–2026

25 ROG and NO_x are precursors to ozone and NO_x is a precursor to PM, for which the SJVAB is in
 26 nonattainment for the NAAQS. Since project emissions exceed the federal *de minimis* threshold for
 27 ROG and NO_x, a general conformity determination must be made to demonstrate that total direct
 28 and indirect emissions of ROG and NO_x would conform to the appropriate SJVAB SIP for each year of
 29 construction in which the *de minimis* thresholds are exceeded.

30 NO_x is also a precursor to PM and can contribute to PM formation. As discussed above, the SJVAB is
 31 currently designated maintenance for the PM₁₀ NAAQS and nonattainment for the PM_{2.5} NAAQS.
 32 NO_x emissions in excess of 100 tons per year trigger a secondary PM precursor threshold, and could
 33 conflict with the applicable PM₁₀ and PM_{2.5} SIPs. As shown in Table 22-23, NO_x emissions
 34 generated by construction activities in the SJVAB would exceed 100 tons per year between 2020 and
 35 2024. NO_x offsets pursued for the purposes of general conformity for those years in which NO_x

⁵⁵ The secondary PM precursor thresholds are triggered through the General Conformity Regulation (40 CFR 93.153 (a)(1)). Accordingly, confinement of the geographic scope for available offsets only applies to the General Conformity determination and does not influence mitigation feasibility for Impacts AQ-1 or AQ-28.

1 emissions exceed 100 tons must occur within the federally designated PM2.5 nonattainment and
 2 PM10 maintenance areas of the SJVAB, which are consistent with the larger nonattainment
 3 boundary for ozone.

4 As shown in Appendix 22E, *General Conformity Determination*, Attachment 22E-1, SJVAPCD confirms
 5 that sufficient emissions reduction credits would be available to fully offset ROG and NO_x emissions
 6 in excess of the federal *de minimis* thresholds zero through implementation of Mitigation Measures
 7 AQ-4a and 4b. Mitigation Measures AQ-4a and 4b will ensure the requirements of the mitigation and
 8 offset program are implemented and conformity requirements for ROG and NO_x are met, should
 9 Alternative 6A be selected as the APA.

10 **Mitigation Measure AQ-4a: Mitigate and Offset Construction-Generated Criteria Pollutant**
 11 **Emissions within SJVAPCD/SJVAB to Net Zero (0) for Emissions in Excess of General**
 12 **Conformity *De Minimis* Thresholds (Where Applicable) and to Quantities below**
 13 **Applicable SJVAPCD CEQA Thresholds for Other Pollutants**

14 Please see Mitigation Measure AQ-4a under Impact AQ-4 in the discussion of Alternative 1A.

15 **Mitigation Measure AQ-4b: Develop an Alternative or Complementary Offsite Mitigation**
 16 **Program to Mitigate and Offset Construction-Generated Criteria Pollutant Emissions**
 17 **within the SJVAPCD/SJVAB to Net Zero (0) for Emissions in Excess of General Conformity**
 18 ***De Minimis* Thresholds (Where Applicable) and to Quantities below Applicable SJVAPCD**
 19 **CEQA Thresholds for Other Pollutants**

20 Please see Mitigation Measure AQ-4b under Impact AQ-4 in the discussion of Alternative 1A.

21 ***San Francisco Bay Area Air Basin***

22 As shown in Table 22-23, implementation of the Alternative 1A (and thus Alternative 6A) would not
 23 exceed any of the SFBAAB federal *de minimis* thresholds. Accordingly, a general conformity
 24 determination is not required as total direct and indirect emissions would conform to the
 25 appropriate SFBAAB SIPs.

26 ***CEQA Conclusion:*** SFNA and SJVAB are classified as nonattainment or maintenance areas with
 27 regard to the ozone and PM10 NAAQS, and the impact of increases in criteria pollutant emissions
 28 above the air basin *de minimis* thresholds could conflict with or obstruct implementation of the
 29 applicable air quality plans. Since construction emissions in the SFNA and SJVAB would exceed the
 30 *de minimis* thresholds for ROG, NO_x, and PM10 (SFNA only), this impact would be significant.

31 Mitigation Measures AQ-4a and AQ-4b would ensure project emissions would not result in an
 32 increase in regional ROG or NO_x in the SJVAB. These measures would therefore ensure total direct
 33 and indirect ROG and NO_x emissions generated by the project would conform to the appropriate
 34 SJVAB SIPs by offsetting the action's emissions in the same or nearby area to net zero. Accordingly,
 35 impacts would be less than significant with mitigation in the SJVAB.

36 Although Mitigation Measures AQ-1a and AQ-1b would reduce NO_x in the SFNA, given the magnitude
 37 of NO_x emissions and the limited geographic scope available for offsets (Sacramento County),
 38 neither measure could feasibly reduce NO_x emissions to net zero for the purposes of general
 39 conformity. This impact would be significant and unavoidable in the SFNA.

1 Emissions generated within the SFBAAB would not exceed the SFBAAB de minimis thresholds and
2 would therefore conform to the appropriate SFBAAB SIPs. No mitigation is required.

3 **Impact AQ-21: Generation of Cumulative Greenhouse Gas Emissions during Construction of**
4 **the Proposed Water Conveyance Facility**

5 **NEPA Effects:** Construction activity required for Alternative 6A was assumed to equal activity
6 required for Alternative 1A (see table 22-21). Emissions generated by Alternative 1A would
7 therefore be representative of emissions generated by Alternative 6A. As shown in Table 22-25,
8 construction of Alternative 6B would generate a total of 2.7 million metric tons of GHG emissions. As
9 discussed in section 22.3.2, *Determination of Effects*, any increase in emissions above net zero
10 associated with construction of the BDCP water conveyance features would be adverse. Accordingly,
11 this effect would be adverse. Mitigation Measure AQ-21, which would develop a GHG Mitigation
12 Program to reduce construction-related GHG emissions to net zero, is available address this effect.

13 **CEQA Conclusion:** Construction of Alternative 6A would generate a total of 2.7 million metric tons of
14 GHG emissions. This is equivalent to adding 569,000 typical passenger vehicles to the road during
15 construction (U.S. Environmental Protection Agency 2014e). As discussed in section 22.3.2,
16 *Determination of Effects*, any increase in emissions above net zero associated with construction of
17 the BDCP water conveyance features would be significant. Mitigation Measure AQ-21 would develop
18 a GHG Mitigation Program to reduce construction-related GHG emissions to net zero. Accordingly,
19 this impact would be less-than-significant with implementation of Mitigation Measure AQ-21.

20 **Mitigation Measure AQ-21: Develop and Implement a GHG Mitigation Program to Reduce**
21 **Construction Related GHG Emissions to Net Zero (0)**

22 Please see Mitigation Measure AQ-21 under Impact AQ-21 in the discussion of Alternative 1A.

23 **Impact AQ-22: Generation of Cumulative Greenhouse Gas Emissions from Operation and**
24 **Maintenance of the Proposed Water Conveyance Facility and Increased Pumping**

25 **NEPA Effects:** Operation of Alternative 6A would generate direct and indirect GHG emissions.
26 Sources of direct emissions include heavy-duty equipment, on road crew trucks, and employee
27 vehicle traffic. Indirect emissions would be generated predominantly by electricity consumption
28 required for pumping as well as, maintenance, lighting, and other activities.

29 Table 22-125 summarizes long-term operational GHG emissions associated with operations,
30 maintenance, and increased SWP pumping. Emissions were quantified for both ELT and LLT
31 conditions, although activities would take place annually until project decommissioning. Emissions
32 include state mandates to reduce GHG emissions (described in Impact AQ-21) are presented (there
33 are no BDCP specific operational environmental commitments). Total CO₂e emissions are compared
34 to both the No Action Alternative (NEPA point of comparison) and Existing Conditions (CEQA
35 baseline). As discussed in Section 22.3.1.2, equipment emissions are assumed to be zero under both
36 the No Action Alternative (NEPA point of comparison) and Existing Conditions (CEQA baseline). The
37 equipment emissions presented in Table 22-125 are therefore representative of project impacts for
38 both the NEPA and CEQA analysis.

1 **Table 22-125. GHG Emissions from Operation, Maintenance, and Increased SWP Pumping, Alternative**
 2 **6A (metric tons/year)**

Condition	Equipment CO ₂ e	Electricity CO ₂ e		Total CO ₂ e	
		NEPA Point of Comparison	CEQA Baseline	NEPA Point of Comparison	CEQA Baseline
ELT	555	-	-98,883	-	-98,327
LLT	541	-13,705	-39,971	-13,164	-39,429

Note: The *NEPA point of comparison* compares total CO₂e emissions after implementation of Alternative 6A to the No Action Alternative, whereas the *CEQA baseline* compares total CO₂e emissions to Existing Conditions. Negative values represent a net reduction in GHG emissions.

3

4 Table 22-27 (Alternative 1A) is representative of equipment GHG emissions that would be generated
 5 in each air district under Alternative 6A. Table 22-27 summarizes equipment CO₂e emissions that
 6 would be generated in the BAAQMD, SMAQMD, and SJVAPCD (no operational emissions would be
 7 generated in the YSAQMD). The table does not include emissions from SWP pumping as these
 8 emissions would be generated by power plants located throughout the state (see discussion
 9 preceding this impact analysis). GHG emissions presented in Table 22-27 are therefore provided for
 10 information purposes only.

11 **SWP Operational and Maintenance GHG Emissions Analysis**

12 Alternative 6A would not add any⁵⁶ additional net electricity demand to operation of the SWP and
 13 would in fact result in a net reduction in electricity demand (see Table 22-125). Therefore, there will
 14 be no impact on SWP operational emissions.

15 A small amount of additional GHG emissions from equipment would be emitted as a result of the
 16 maintenance of new facilities associated with Alternative 6A (Table 22-125). Emissions from
 17 additional maintenance activities would become part of the overall DWR maintenance program for
 18 the SWP and would be managed under DWR's CAP.

19 The CAP sets forth DWR's plan to manage its activities and operations to achieve its GHG emissions
 20 reduction goals. The CAP commits DWR to monitoring its emissions each year and evaluating its
 21 emissions every five years to determine whether it is on a trajectory to achieve its GHG emissions
 22 reduction goals. If it appears that DWR will not meet the GHG emission reduction goals established
 23 in the plan, DWR may make adjustments to existing emissions reduction measures, devise new
 24 measures to ensure achievement of the goals, or take other action.

25 Consistent with the analysis contained in the CAP and associated Initial Study and Negative
 26 Declaration for the CAP, BDCP Alternative 6A would not adversely affect DWR's ability to achieve
 27 the GHG emissions reduction goals set forth in the CAP. Further, Alternative 6A would not conflict
 28 with any of DWR's specific action GHG emissions reduction measures and implements all applicable

⁵⁶ Estimated net energy demand differs slightly from what is presented in Chapter 21, *Energy*. This is because the above analysis includes energy needed for transmission and distribution of water along the Valley String, which is required to enable a comparison with the assumptions in DWR's CAP.

1 project level GHG emissions reduction measures as set forth in the CAP. BDCP Alternative 6A is
2 therefore consistent with the analysis performed in the CAP. There would be no adverse effect.

3 **CEQA Conclusion:** SWP GHG emissions currently are below 1990 levels and achievement of the
4 goals of the CAP means that total DWR GHG emissions will be reduced to 50% of 1990 levels by
5 2020 and to 80% of 1990 levels by 2050. The implementation of BDCP Alternative 6A would not
6 affect DWR's established emissions reduction goals or baseline (1990) emissions and therefore
7 would not result in a change in total DWR emissions that would be considered significant. Prior
8 adoption of the CAP by DWR already provides a commitment on the part of DWR to make all
9 necessary modifications to DWR's REPP (as described above) or any other GHG emission reduction
10 measure in the CAP that are necessary to achieve DWR's GHG emissions reduction goals. Therefore
11 no amendment to the approved CAP is necessary to ensure the occurrence of the additional GHG
12 emissions reduction activities needed to account for BDCP-related operational or maintenance
13 emissions. The effect of BDCP Alternative 6A with respect to GHG emissions is less than
14 cumulatively considerable and therefore less than significant. No mitigation is required.

15 **Impact AQ-23: Generation of Cumulative Greenhouse Gas Emissions from Increased CVP** 16 **Pumping as a Result of Implementation of CM1**

17 **NEPA Effects:** As previously discussed, DWR's CAP cannot be used to evaluate environmental
18 impacts associated with increased CVP pumping, as emissions associated with CVP are not under
19 DWR's control and are not included in the CAP. Accordingly, GHG emissions resulting from increased
20 CVP energy use are evaluated separately from GHG emissions generated as a result of SWP energy
21 use.

22 Under Alternative 6A, operation of the CVP yields the generation of clean, GHG emissions-free,
23 hydroelectric energy. This electricity is sold into the California electricity market or directly to
24 energy users. Analysis of the existing and future no action condition indicates that the CVP generates
25 and will continue to generate all of the electricity needed to operate the CVP system and
26 approximately 3,500 GWh of excess hydroelectric energy that would be sold to energy users
27 throughout California.

28 Implementation of Alternative 6A is neither expected to require additional electricity over the No
29 Action Alternative nor reduce the amount of excess CVP generation available for sale from the CVP
30 to electricity users. The CVP is operated using energy generated at CVP hydroelectric facilities and
31 therefore results in no GHG emissions. Rather, implementation of Alternative 6A would reduce GHG
32 emissions by 24,398 to 31,398 metric tons of CO₂e, relative to the No Action Alternative (depending
33 on whether the RPS is assumed in the emissions calculations). Accordingly, there would be no
34 adverse effect.

35 **CEQA Conclusion:** Implementation of Alternative 6A is neither expected to require additional
36 electricity over Existing Conditions nor reduce the amount of excess CVP generation available for
37 sale from the CVP to electricity users. All power supplied to CVP facilities would continue to be
38 supplied by GHG emissions-free hydroelectricity and there would be no increase in GHG emissions
39 over Existing Conditions as a result of CVP operations. The impact would be less than significant and
40 no mitigation is required.

1 **Impact AQ-24: Generation of Regional Criteria Pollutants from Implementation of CM2–CM11**

2 **NEPA Effects:** Table 22-29 summarizes potential construction and operational emissions that may
 3 be generated by implementation of CM2–CM11. See the discussion of Impact AQ-24 under
 4 Alternative 1A.

5 Criteria pollutants from restoration and enhancement actions could exceed applicable general
 6 conformity *de minimis* levels and applicable local thresholds. The effect would vary according to the
 7 equipment used in construction of a specific conservation measure, the location, the timing of the
 8 actions called for in the conservation measure, and the air quality conditions at the time of
 9 implementation; these effects would be evaluated and identified in the subsequent project-level
 10 environmental analysis conducted for the CM2–CM11 restoration and enhancement actions. The
 11 effect of increases in emissions during implementation of CM2–CM11 in excess of applicable general
 12 conformity *de minimis* levels and air district regional thresholds (Table 22-8) could violate air basin
 13 SIPs and worsen existing air quality conditions. Mitigation Measure AQ-24 would be available to
 14 reduce this effect, but emissions would still be adverse.

15 **CEQA Conclusion:** Construction and operational emissions associated with the restoration and
 16 enhancement actions would result in a significant impact if the incremental difference, or increase,
 17 relative to Existing Conditions exceeds the applicable local air district thresholds shown in Table 22-
 18 8; these effects are expected to be further evaluated and identified in the subsequent project-level
 19 environmental analysis conducted for the CM2–CM11 restoration and enhancement actions.
 20 Mitigation Measure AQ-24 would be available to reduce this effect, but may not be sufficient to
 21 reduce emissions below applicable air quality management district thresholds (see Table 22-8).
 22 Consequently, this impact would be significant and unavoidable.

23 **Mitigation Measure AQ-24: Develop an Air Quality Mitigation Plan (AQMP) to Ensure Air** 24 **District Regulations and Recommended Mitigation are Incorporated into Future** 25 **Conservation Measures and Associated Project Activities**

26 Please see Mitigation Measure AQ-24 under Impact AQ-24 in the discussion of Alternative 1A.

27 **Impact AQ-25: Exposure of Sensitive Receptors to Health Hazards from Localized Particulate** 28 **Matter, Carbon Monoxide, and Diesel Particulate Matter from Implementation of CM2–CM11**

29 **NEPA Effects:** The potential for Alternative 6A to expose sensitive receptors increased health
 30 hazards from localized PM, CO, and DPM would be similar to Alternative 1A. Activities shown in
 31 Table 22-29 with the greatest potential to have short or long-term air quality impacts are also
 32 anticipated to have the greatest potential to expose receptors to substantial pollutant
 33 concentrations. The effect would vary according to the equipment used, the location and timing of
 34 the actions called for in the conservation measure, the meteorological and air quality conditions at
 35 the time of implementation, and the location of receptors relative to the emission source. Potential
 36 health effects would be evaluated and identified in the subsequent project-level environmental
 37 analysis conducted for the CM2–CM11 restoration and enhancement actions.

38 The effect of increases in PM, CO, or DPM (cancer and non-cancer-risk) in excess of applicable air
 39 district thresholds (Table 22-8) at receptor locations could result in adverse health impacts.
 40 Mitigation Measures AQ-24 and AQ-25 would be available to reduce this effect.

41 **CEQA Conclusion:** Construction and operational emissions associated with the restoration and
 42 enhancement actions under Alternative 6A would result in a significant impact if PM, CO, or DPM

(cancer and non-cancer-risk) concentrations at receptor locations exceed the applicable local air district thresholds shown in Table 22-8; these effects are expected to be further evaluated and identified in the subsequent project-level environmental analysis conducted for the CM2–CM11 restoration and enhancement actions. Mitigation Measures AQ-24 and AQ-25 would ensure localized concentrations at receptor locations would be below applicable air quality management district thresholds (see Table 22-8). Consequently, this impact would be less than significant.

Mitigation Measure AQ-24: Develop an Air Quality Mitigation Plan (AQMP) to Ensure Air District Regulations and Recommended Mitigation are Incorporated into Future Conservation Measures and Associated Project Activities

Please see Mitigation Measure AQ-24 under Impact AQ-24 in the discussion of Alternative 1A.

Mitigation Measure AQ-25: Prepare a Project-Level Health Risk Assessment to Reduce Potential Health Risks from Exposure to Localized DPM and PM Concentrations

Please see Mitigation Measure AQ-25 under Impact AQ-25 in the discussion of Alternative 1A.

Impact AQ-26: Creation of Potential Odors Affecting a Substantial Number of People from Implementation of CM2–CM11

NEPA Effects: The potential for Alternative 6A to expose sensitive receptors increased odors would be similar to Alternative 1A. Accordingly, construction activities associated with CM2–CM11 are not anticipated to result in nuisance odors. Similarly, while restored land uses associated with the program have the potential to generate odors from natural processes, the emissions would be similar in origin and magnitude to the existing land use types in the restored area (e.g., managed wetlands). Moreover, specific odor effects would be evaluated and identified in the subsequent project-level environmental analysis conducted for the CM2–CM11 restoration and enhancement actions. Accordingly, odor-related effects associated with CM2–CM11 would not be adverse.

CEQA Conclusion: Alternative 6A would not result in the addition of major odor producing facilities. Diesel emissions during construction could generate temporary odors, but these would quickly dissipate and cease once construction is completed. Increases in wetland, tidal, and upland habitats may increase the potential for odors from natural processes. However, the origin and magnitude of odors would be similar to the existing land use types in the restored area (e.g., managed wetlands). Moreover, specific odor impacts would be evaluated and identified in the subsequent project-level environmental analysis conducted for the CM2–CM11 restoration and enhancement actions. Accordingly, the impact of exposure of sensitive receptors to potential odors would be less than significant. No mitigation is required.

Impact AQ-27: Generation of Cumulative Greenhouse Gas Emissions from Implementation of CM2–CM11

NEPA Effects: CM2–CM11 implemented under Alternative 6A would result in local GHG emissions from construction equipment and vehicle exhaust, similar to Alternative 1A. Restoration activities with the greatest potential for emissions include those that break ground and require use of earthmoving equipment. The type of restoration action and related construction equipment use are shown in Table 22-29. Implementing CM2–CM11 would also affect long-term sequestration rates through land use changes, such as conversion of agricultural land to wetlands, inundation of peat soils, drainage of peat soils, and removal or planting of carbon-sequestering plants.

1 Without additional information on site-specific characteristics associated with each of the
 2 restoration components, a complete assessment of GHG flux from CM2–CM11 is currently not
 3 possible. The effect of carbon sequestration and CH₄ generation would vary by land use type, season,
 4 and chemical and biological characteristics; these effects would be evaluated and identified in the
 5 subsequent project-level environmental analysis conducted for the CM2–CM11 restoration and
 6 enhancement actions. Mitigation Measures AQ-24 and AQ-27 would be available to reduce this
 7 effect. However, due to the potential for increases in GHG emissions from construction and land use
 8 change, this effect would be adverse.

9 **CEQA Conclusion:** The restoration and enhancement actions under Alternative 6A could result in a
 10 significant impact if activities are inconsistent with applicable GHG reduction plans, do not
 11 contribute to a lower carbon future, or generate excessive emissions, relative to other projects
 12 throughout the state. These effects are expected to be further evaluated and identified in the
 13 subsequent project-level environmental analysis conducted for the CM2–CM11 restoration and
 14 enhancement actions. Mitigation Measures AQ-24 and AQ-27 would be available to reduce this
 15 impact, but may not be sufficient to reduce to a less-than-significant level. Consequently, this impact
 16 would be significant and unavoidable.

17 **Mitigation Measure AQ-24: Develop an Air Quality Mitigation Plan (AQMP) to Ensure Air**
 18 **District Regulations and Recommended Mitigation are Incorporated into Future**
 19 **Conservation Measures and Associated Project Activities**

20 Please see Mitigation Measure AQ-24 under Impact AQ-24 in the discussion of Alternative 1A.

21 **Mitigation Measure AQ-27: Prepare a Land Use Sequestration Analysis to Quantify and**
 22 **Mitigate (as Needed) GHG Flux Associated with Conservation Measures and Associated**
 23 **Project Activities**

24 Please see Mitigation Measure AQ-27 under Impact AQ-27 in the discussion of Alternative 1A.

25 **22.3.3.12 Alternative 6B—Isolated Conveyance with East Alignment and**
 26 **Intakes 1–5 (15,000 cfs; Operational Scenario D)**

27 A total of five intakes would be constructed under Alternative 6B. For the purposes of this analysis,
 28 it was assumed that Intakes 1–5 (on the east bank of the Sacramento River) would be constructed
 29 under Alternative 6B. Under this alternative, an intermediate pumping plant would also be
 30 constructed, and the conveyance facility would be a canal (Figures 3-4 and 3-14 in Chapter 3,
 31 *Description of Alternatives*).

32 Construction and operation of Alternative 6B would require the use of electricity, which would be
 33 supplied by the California electrical grid. Power plants located throughout the state supply the grid
 34 with power, which will be distributed to the Study area to meet project demand. Power supplied by
 35 statewide power plants will generate criteria pollutants. Because these power plants are located
 36 throughout the state, criteria pollutant emissions associated with Alternative 6B electricity demand
 37 cannot be ascribed to a specific air basin or air district within the Study area. Criteria pollutant
 38 emissions from electricity consumption are therefore provided for informational purposes only and
 39 are not included in the impact conclusion.

40 Construction activity required for Alternative 6B was assumed to equal activity required for
 41 Alternative 1B. Construction emissions generated by Alternative 1B would therefore be

1 representative of emissions generated by Alternative 6B. Refer to Table 22-31 for a summary of
 2 criteria pollutants during construction (years 2016 through 2029) of Alternative 1B that are
 3 applicable to this alternative. Operational emissions would be different from Alternative 1B and are
 4 provided in Table 22-126. Negative values represent an emissions benefit, relative to the No Action
 5 Alternative or Existing Conditions.

6 **Table 22-126. Criteria Pollutant Emissions from Electricity Consumption: Net Project Operations,**
 7 **Alternative 6B (tons/year)^{a,b}**

Year	Analysis	ROG	CO	NO _x	PM10	PM2.5 ^c	SO ₂
ELT	CEQA	-2	-16	-221	-19	-19	-93
LLT	NEPA	-1	-9	-122	-10	-10	-52
LLT	CEQA	-2	-21	-288	-24	-24	-122

NEPA = Compares criteria pollutant emissions after implementation of Alternative 6B to the No Action Alternative.

CEQA = Compares criteria pollutant emissions after implementation of Alternative 6B to Existing Conditions.

^a Emissions assume implementation of RPS (see Appendix 22A, *Air Quality Analysis Methodology*). Power plants that generate electricity for the proposed project would be subject to local air district permitting requirements, including standards to implement BACT to reduce criteria pollutant emissions.

^b Because GHG emissions are cumulative (see Section 22.3.2.1) and not evaluated at the local air basin or air district level, they are discussed in Impacts AQ-21 and AQ-22. The GHG analysis for SWP power utilizes actual and forecasted GHG emissions rates for the SWP system, which differs slightly from the above analysis. Statewide grid average emission factors were utilized for the above analysis as criteria pollutant emission factors for SWP were unavailable. Please also note that the above analysis does not account for additional renewable energy that will be procured through modifications to DWR's REPP (see Impact AQ-22). Accordingly, the emissions results presented above represent a conservative assessment of potential criteria pollutant emissions.

^c Emission factors for PM2.5 are currently unavailable. Consequently, PM2.5 emissions were assumed to equal PM10 emissions. Because PM2.5 represents a fraction of PM10, this approach represents a conservative assessment of PM2.5 emissions from electricity consumption.

9 **Impact AQ-1: Generation of Criteria Pollutants in Excess of the SMAQMD Regional Thresholds** 10 **during Construction of the Proposed Water Conveyance Facility**

11 **NEPA Effects:** Construction activity required for Alternative 6B was assumed to equal activity
 12 required for Alternative 1B. Emissions generated by Alternative 1B would therefore be
 13 representative of emissions generated by Alternative 6B. As shown in Table 22-30, emissions would
 14 exceed SMAQMD's daily NO_x threshold, even with implementation of environmental commitments.
 15 Since NO_x is a precursor to ozone and PM, exceedances of SMAQMD's daily NO_x threshold could
 16 impact both regional ozone and PM formation, which could worsen regional air quality and air basin
 17 attainment of the NAAQS and CAAQS.

18 While equipment could operate at any work area identified for this alternative, the highest level of
 19 NO_x and fugitive dust emissions in the SMAQMD are expected to occur at those sites where the
 20 duration and intensity of construction activities would be greatest. This includes all intake and
 21 intake pumping plant sites along the east bank of the Sacramento River. See the discussion of Impact
 22 AQ-1 under Alternative 1B.

1 Environmental commitments will reduce construction-related emissions; however, as shown in
 2 Table 22-31, NO_x emissions would still exceed SMAQMD's threshold identified in Table 22-8 and
 3 would result in an adverse effect to air quality. Mitigation Measures AQ-1a and AQ-1b would be
 4 available to reduce NO_x emissions, and would thus address regional effects related to secondary
 5 ozone and PM formation.

6 **CEQA Conclusion:** NO_x emissions generated during construction would exceed SMAQMD threshold
 7 identified in Table 22-8. Since NO_x is a precursor to ozone and PM, exceedances of SMAQMD's daily
 8 NO_x threshold could impact both regional ozone and PM formation. SMAQMD's regional emissions
 9 thresholds (Table 22-8) have been adopted to ensure projects do not hinder attainment of the
 10 CAAQS or NAAQS. The impact of generating NO_x emissions in excess of local air district thresholds
 11 would therefore violate applicable air quality standards in the Study area and could contribute to or
 12 worsen an existing air quality conditions. This would be a significant impact. Mitigation Measures
 13 AQ-1a and AQ-1b would be available to reduce NO_x emissions to a less-than-significant level by
 14 offsetting emissions to quantities below SMAQMD CEQA thresholds (see Table 22-8).

15 **Mitigation Measure AQ-1a: Mitigate and Offset Construction-Generated Criteria Pollutant**
 16 **Emissions within the SFNA to Net Zero (0) for Emissions in Excess of General Conformity**
 17 **De Minimis Thresholds (Where Applicable) and to Quantities below Applicable CEQA**
 18 **Thresholds for Other Pollutants**

19 Please see Mitigation Measure AQ-1a under Impact AQ-1 in the discussion of Alternative 1A.

20 **Mitigation Measure AQ-1b: Develop an Alternative or Complementary Offsite Mitigation**
 21 **Program to Mitigate and Offset Construction-Generated Criteria Pollutant Emissions**
 22 **within the SFNA to Net Zero (0) for Emissions in Excess of General Conformity De Minimis**
 23 **Thresholds (Where Applicable) and to Quantities below Applicable CEQA Thresholds for**
 24 **Other Pollutants**

25 Please see Mitigation Measure AQ-1b under Impact AQ-1 in the discussion of Alternative 1A.

26 **Impact AQ-2: Generation of Criteria Pollutants in Excess of the YSAQMD Regional Thresholds**
 27 **during Construction of the Proposed Water Conveyance Facility**

28 **NEPA Effects:** Construction activity required for Alternative 6B within the YSAQMD was assumed to
 29 equal activity required for Alternative 1B. Emissions generated by Alternative 1B would therefore
 30 be representative of emissions generated by Alternative 6B. As shown in Table 22-31, emissions
 31 would exceed YSAQMD's NO_x and PM₁₀ thresholds, even with implementation of environmental
 32 commitments (see Appendix 3B, *Environmental Commitments*).

33 Since NO_x is a precursor to ozone and PM, exceedances of SMAQMD's daily NO_x threshold could
 34 impact both regional ozone and PM formation, which could worsen regional air quality and air basin
 35 attainment of the NAAQS and CAAQS. Similarly, exceedances of YSAQMD's PM₁₀ threshold could
 36 impede attainment of the NAAQS and CAAQS for PM₁₀. All emissions generated within YSAQMD are
 37 a result of haul truck movement for equipment and material delivery.

38 Environmental commitments outlined in Appendix 3B, *Environmental Commitments*, will reduce
 39 construction-related emissions; however, as shown in Table 22-31, NO_x and PM₁₀ emissions would
 40 still exceed the applicable YSAQMD thresholds identified in Table 22-8 and result in an adverse
 41 regional effect to air quality. Mitigation Measures AQ-1a and AQ-1b are available to reduce NO_x and

1 PM10 emissions, and would thus address regional effects related to secondary ozone and PM
2 formation.

3 **CEQA Conclusion:** Emissions of NO_x and PM10 generated during construction would exceed
4 YSAQMD's regional thresholds identified in Table 22-8. Since NO_x is a precursor to ozone and NO_x is
5 a precursor to PM, exceedances of YSAQMD's NO_x threshold could impact both regional ozone and
6 PM formation, which could worsen regional air quality and air basin attainment of the NAAQS and
7 CAAQS. Similarly, exceedances of YSAQMD's PM10 threshold could impede attainment of the NAAQS
8 and CAAQS for PM10. YSAQMD's regional emissions thresholds (Table 22-8) have been adopted to
9 ensure projects do not hinder attainment of the CAAQS or NAAQS. The impact of generating NO_x and
10 PM10 in excess of local air district regional thresholds would therefore violate applicable air quality
11 standards in the study area and could contribute to or worsen an existing air quality conditions. This
12 would be a significant impact. Mitigation Measures AQ-1a and AQ-1b would be available to reduce
13 NO_x and PM10 emissions to a less-than-significant level by offsetting emissions to quantities below
14 YSAQMD CEQA thresholds (see Table 22-8).

15 **Mitigation Measure AQ-1a: Mitigate and Offset Construction-Generated Criteria Pollutant**
16 **Emissions within the SFNA to Net Zero (0) for Emissions in Excess of General Conformity**
17 **De Minimis Thresholds (Where Applicable) and to Quantities below Applicable CEQA**
18 **Thresholds for Other Pollutants**

19 Please see Mitigation Measure AQ-1a under Impact AQ-1 in the discussion of Alternative 1A.

20 **Mitigation Measure AQ-1b: Develop an Alternative or Complementary Offsite Mitigation**
21 **Program to Mitigate and Offset Construction-Generated Criteria Pollutant Emissions**
22 **within the SFNA to Net Zero (0) for Emissions in Excess of General Conformity De Minimis**
23 **Thresholds (Where Applicable) and to Quantities below Applicable CEQA Thresholds for**
24 **Other Pollutants**

25 Please see Mitigation Measure AQ-1b under Impact AQ-1 in the discussion of Alternative 1A.

26 **Impact AQ-3: Generation of Criteria Pollutants in Excess of the BAAQMD Regional Thresholds**
27 **during Construction of the Proposed Water Conveyance Facility**

28 **NEPA Effects:** Construction activity required for Alternative 6B was assumed to equal activity
29 required for Alternative 1B. Emissions generated by Alternative 1B would therefore be
30 representative of emissions generated by Alternative 6B. As shown in Table 22-30, emissions would
31 exceed BAAQMD's daily ROG and NO_x thresholds, even after implementation of environmental
32 commitments. All other pollutants would be below air district thresholds and therefore would not
33 result in an adverse air quality effect.

34 Since ROG and NO_x are precursors to ozone and NO_x is a precursor to PM, exceedances of BAAQMD's
35 ROG and NO_x thresholds could impact both regional ozone and PM formation, which could worsen
36 regional air quality and air basin attainment of the NAAQS and CAAQS.

37 While equipment could operate at any work area identified for this alternative, the highest level of
38 ROG and NO_x emissions in the BAAQMD is expected to occur at those sites where the duration and
39 intensity of construction activities would be greatest, including the site of the Byron Tract Forebay
40 adjacent to and south of Clifton Court Forebay. See the discussion of Impact AQ-3 under Alternative
41 1B.

1 Environmental commitments outlined in Appendix 3B, *Environmental Commitments*, will reduce
 2 construction-related emissions; however, as shown in Table 22-31, ROG and NO_x emissions would
 3 still exceed the applicable air district thresholds identified in Table 22-8 and would result in a
 4 regional adverse effect to air quality. Mitigation Measures AQ-3a and AQ-3b would be available to
 5 address this effect.

6 **CEQA Conclusion:** Emissions of ROG and NO_x precursors generated during construction would
 7 exceed BAAQMD thresholds identified in Table 22-8. Since ROG and NO_x are precursors to ozone
 8 and NO_x is a precursor to PM, exceedances of BAAQMD's ROG and NO_x thresholds could impact both
 9 regional ozone and PM formation. BAAQMD's regional emissions thresholds (Table 22-8) have been
 10 adopted to ensure projects do not hinder attainment of the CAAQS or NAAQS. The impact of
 11 generating ROG and NO_x emissions in excess of BAAQMD's thresholds would therefore violate
 12 applicable air quality standards in the Study area and could contribute to or worsen an existing air
 13 quality conditions. This would be a significant impact. Mitigation Measures AQ-3a and AQ-3b would
 14 be available to reduce ROG and NO_x emissions to a less-than-significant level.

15 **Mitigation Measure AQ-3a: Mitigate and Offset Construction-Generated Criteria Pollutant**
 16 **Emissions within BAAQMD/SFBAAB to Net Zero (0) for Emissions in Excess of General**
 17 **Conformity *De Minimis* Thresholds (Where Applicable) and to Quantities below**
 18 **Applicable BAAQMD CEQA Thresholds for Other Pollutants**

19 Please see Mitigation Measure AQ-3a under Impact AQ-3 in the discussion of Alternative 1A.

20 **Mitigation Measure AQ-3b: Develop an Alternative or Complementary Offsite Mitigation**
 21 **Program to Mitigate and Offset Construction-Generated Criteria Pollutant Emissions**
 22 **within the BAAQMD/SFBAAB to Net Zero (0) for Emissions in Excess of General**
 23 **Conformity *De Minimis* Thresholds (Where Applicable) and to Quantities below**
 24 **Applicable BAAQMD CEQA Thresholds for Other Pollutants**

25 Please see Mitigation Measure AQ-3b under Impact AQ-3 in the discussion of Alternative 1A.

26 **Impact AQ-4: Generation of Criteria Pollutants in Excess of the SJVAPCD Regional Thresholds**
 27 **during Construction of the Proposed Water Conveyance Facility**

28 **NEPA Effects:** Construction activity required for Alternative 6B was assumed to equal activity
 29 required for Alternative 1B. Emissions generated by Alternative 1B would therefore be
 30 representative of emissions generated by Alternative 6B. As shown in Table 22-30, emissions would
 31 exceed SJVAPCD's regional thresholds for ROG, NO_x, PM₁₀, and PM_{2.5}, even with implementation of
 32 environmental commitments. All other pollutants would be below air district thresholds and
 33 therefore would not result in an adverse air quality effect.

34 Since ROG and NO_x are precursors to ozone and NO_x is a precursor to PM, exceedances of SJVAPCD's
 35 ROG and NO_x thresholds could impact both regional ozone and PM formation, which could worsen
 36 regional air quality and air basin attainment of the NAAQS and CAAQS. Similarly, exceedances of
 37 SJVAPCD's PM₁₀ and PM_{2.5} thresholds could impede attainment of the NAAQS and CAAQS for PM.

38 While equipment could operate at any work area identified for this alternative, the highest level of
 39 ROG, NO_x, PM₁₀, and PM_{2.5} emissions in the SJVAPCD are expected to occur at those sites where the
 40 duration and intensity of construction activities would be greatest. This includes all temporary and
 41 permanent utility sites, as well as all construction sites along the east conveyance alignment. PM₁₀

1 and PM2.5 emissions are expected to be greatest within the immediate vicinity of the concrete
2 batching plants. For a map of the proposed east alignment, see Mapbook Figure M3-2.

3 Environmental commitments outlined in Appendix 3B, *Environmental Commitments*, will reduce
4 construction-related emissions; however, as shown in Table 22-30, ROG, NO_x, PM10, and PM2.5
5 emissions would still exceed the applicable air district thresholds identified in Table 22-8. Mitigation
6 Measures AQ-4a and AQ-4b are available to reduce ROG, NO_x, PM10, and PM2.5 emissions, and
7 would thus address regional effects related to secondary ozone and PM formation.

8 **CEQA Conclusion:** Emissions of ROG, NO_x, PM10, and PM2.5 generated during construction would
9 exceed SJVAPCD's annual significance threshold identified in Table 22-8. Since ROG and NO_x are
10 precursors to ozone and NO_x is a precursor to PM, exceedances of SJVAPCD's ROG and NO_x
11 thresholds could impact both regional ozone and PM formation, which could worsen regional air
12 quality and air basin attainment of the NAAQS and CAAQS. Similarly, exceedances of SJVAPCD's
13 PM10 and PM2.5 thresholds could impede attainment of the NAAQS and CAAQS for PM. SJVAPCD's
14 regional emissions thresholds (Table 22-8) have been adopted to ensure projects do not hinder
15 attainment of the CAAQS or NAAQS. The impact of generating ROG, NO_x, PM10, and PM2.5 emissions
16 in excess of local air district thresholds would therefore violate applicable air quality standards in
17 the Study area and could contribute to or worsen an existing air quality conditions. This would be a
18 significant impact. Mitigation Measures AQ-4a and AQ-4b would be available to reduce emissions to
19 a less-than-significant level.

20 **Mitigation Measure AQ-4a: Mitigate and Offset Construction-Generated Criteria Pollutant**
21 **Emissions within SJVAPCD/SJVAB to Net Zero (0) for Emissions in Excess of General**
22 **Conformity *De Minimis* Thresholds (Where Applicable) and to Quantities below**
23 **Applicable SJVAPCD CEQA Thresholds for Other Pollutants**

24 Please see Mitigation Measure AQ-4a under Impact AQ-4 in the discussion of Alternative 1A.

25 **Mitigation Measure AQ-4b: Develop an Alternative or Complementary Offsite Mitigation**
26 **Program to Mitigate and Offset Construction-Generated Criteria Pollutant Emissions**
27 **within the SJVAPCD/SJVAB to Net Zero (0) for Emissions in Excess of General Conformity**
28 ***De Minimis* Thresholds (Where Applicable) and to Quantities below Applicable SJVAPCD**
29 **CEQA Thresholds for Other Pollutants**

30 Please see Mitigation Measure AQ-4b under Impact AQ-4 in the discussion of Alternative 1A.

31 **Impact AQ-5: Generation of Criteria Pollutants in Excess of the SMAQMD Regional Thresholds**
32 **from Operation and Maintenance of the Proposed Water Conveyance Facility**

33 **NEPA Effects:** Operations and maintenance activities in SMAQMD required for Alternative 6B were
34 assumed to equal activities required for Alternative 1B. Emissions generated by Alternative 1B
35 would therefore be representative of emissions generated by Alternative 6B. As shown in Table 22-
36 32, emissions would not exceed SMAQMD's regional thresholds of significance and there would be
37 no adverse effect. See the discussion of Impact AQ-5 under Alternative 1B.

38 **CEQA Conclusion:** Emissions generated during operation and maintenance activities would not
39 exceed SMAQMD regional thresholds for criteria pollutants. SMAQMD's regional emissions
40 thresholds (Table 22-8) have been adopted to ensure projects do not hinder attainment of the
41 CAAQS or NAAQS. The impact of generating emissions in excess of local air district would therefore

1 violate applicable air quality standards in the Study area and could contribute to or worsen an
 2 existing air quality conditions. Because project operations would not exceed SMAQMD regional
 3 thresholds, the impact would be less than significant. No mitigation is required.

4 **Impact AQ-6: Generation of Criteria Pollutants in Excess of the YSAQMD Regional Thresholds**
 5 **from Operation and Maintenance of the Proposed Water Conveyance Facility**

6 *NEPA Effects:* Alternative 6B would not involve the construction of any permanent features in the
 7 YSAQMD that would require routine operations and maintenance. No operational emissions would
 8 be generated in the YSAQMD. Consequently, operation of Alternative 6B would neither exceed the
 9 YSAQMD thresholds of significance nor result in an adverse effect on air quality.

10 *CEQA Conclusion:* No operational or maintenance emissions generated by the alternative would
 11 occur in YSAQMD and, therefore, YSAQMD's regional thresholds would not be exceeded (see Table
 12 22-8). This impact would be less than significant. No mitigation is required.

13 **Impact AQ-7: Generation of Criteria Pollutants in Excess of the BAAQMD Regional Thresholds**
 14 **from Operation and Maintenance of the Proposed Water Conveyance Facility**

15 *NEPA Effects:* Operations and maintenance activities in BAAQMD required for Alternative 6B were
 16 assumed to equal activities required for Alternative 1B. Emissions generated by Alternative 1B
 17 would therefore be representative of emissions generated by Alternative 6B. As shown in Table 22-
 18 32, emissions would not exceed BAAQMD's regional thresholds of significance and there would be
 19 no adverse effect. See the discussion of Impact AQ-7 under Alternative 1B.

20 *CEQA Conclusion:* Emissions generated during operation and maintenance activities would not
 21 exceed BAAQMD regional thresholds for criteria pollutants. BAAQMD's regional emissions
 22 thresholds (Table 22-8) have been adopted to ensure projects do not hinder attainment of the
 23 CAAQS or NAAQS. The impact of generating emissions in excess of local air district thresholds would
 24 violate applicable air quality standards in the Study area and could contribute to or worsen an
 25 existing air quality conditions. Because project operations would not exceed BAAQMD regional
 26 thresholds, the impact would be less than significant. No mitigation is required.

27 **Impact AQ-8: Generation of Criteria Pollutants in Excess of the SJVAPCD Regional Thresholds**
 28 **from Operation and Maintenance of the Proposed Water Conveyance Facility**

29 *NEPA Effects:* Operations and maintenance activities in SJVAPCD required for Alternative 6B were
 30 assumed to equal activities required for Alternative 1B. Emissions generated by Alternative 1B
 31 would therefore be representative of emissions generated by Alternative 6B. As shown in Table 22-
 32 32, emissions would not exceed SJVAPCD's regional thresholds of significance and there would be no
 33 adverse effect. See the discussion of Impact AQ-8 under Alternative 1B.

34 *CEQA Conclusion:* Emissions generated during operation and maintenance activities would not
 35 exceed SJVAPCD's regional thresholds of significance. SJVAPCD's regional emissions thresholds
 36 (Table 22-8) have been adopted to ensure projects do not hinder attainment of the CAAQS or
 37 NAAQS. The impact of generating emissions in excess of local air district thresholds would violate
 38 applicable air quality standards in the Study area and could contribute to or worsen an existing air
 39 quality conditions. Because project operations would not exceed SJVAPCD regional thresholds, the
 40 impact would be less than significant. No mitigation is required.

1 **Impact AQ-9: Exposure of Sensitive Receptors to Health Hazards from Localized Particulate**
 2 **Matter in Excess of SMAQMD's Health-Based Concentration Thresholds**

3 **NEPA Effects:** Construction activity required for Alternative 6B within the SMAQMD was assumed to
 4 equal activity required for Alternative 1B. Emissions and associated health risks from exposure to
 5 localized PM under Alternative 1B would therefore be representative of emissions and health risks
 6 generated by Alternative 6B.

7 As shown in Table 22-33, concentrations of annual PM10 and PM2.5 would be below the SMAQMD's
 8 significance thresholds. However, concentrations of PM10 would exceed SMAQMD's 24-hour PM10
 9 threshold near intakes and intake work areas, even with implementation of environmental
 10 commitments (see Appendix 3B, *Environmental Commitments*). Receptors exposed to PM10
 11 concentrations in excess of SMAQMD's threshold could experience increased risk for adverse human
 12 health effects. Mitigation Measure AQ-9 is available to address this effect.

13 **CEQA Conclusion:** Respirable particulates pose a human health hazard by bypassing the defenses
 14 within the mucous ciliary system and entering deep lung tissue. Construction of Alternative 6B
 15 would result in the short-term exposure of receptors to PM10 concentrations that exceed SMAQMD
 16 threshold. This would be a significant impact. Mitigation Measure AQ-9 outlines a tiered strategy to
 17 reduce PM10 concentrations and public exposure to a less-than-significant level.

18 **Mitigation Measure AQ-9: Implement Measures to Reduce Re-Entrained Road Dust and**
 19 **Receptor Exposure to PM2.5 and PM10**

20 Please see Mitigation Measure AQ-9 under Impact AQ-9 in the discussion of Alternative 1A.

21 **Impact AQ-10: Exposure of Sensitive Receptors to Health Hazards from Localized Particulate**
 22 **Matter in Excess of YSAQMD's Health-Based Concentration Thresholds**

23 **NEPA Effects:** Construction activity required for Alternative 6B within the YSAQMD was assumed to
 24 equal activity required for Alternative 1B. Emissions and associated health risks from exposure to
 25 localized PM under Alternative 1B would therefore be representative of emissions and health risks
 26 generated by Alternative 6B. As shown previously in Table 22-34, concentrations of particulate
 27 matter would not exceed YSAQMD's 24-hour and annual PM10 and PM2.5 thresholds and
 28 consequently would not result in an adverse effect to human health.

29 **CEQA Conclusion:** Respirable particulates pose a human health hazard by bypassing the defenses
 30 within the mucous ciliary system and entering deep lung tissue. Construction of Alternative 6B
 31 would result in PM2.5 and PM10 concentrations at receptor locations that are below the significance
 32 thresholds established by the YSAQMD. As such, localized particulate matter concentrations at
 33 analyzed receptors would not result in significant human health impacts. No mitigation is required.

34 **Impact AQ-11: Exposure of Sensitive Receptors to Health Hazards from Localized Particulate**
 35 **Matter in Excess of BAAQMD's Health-Based Concentration Thresholds**

36 **NEPA Effects:** Construction activity required for Alternative 6B within the BAAQMD was assumed to
 37 equal activity required for Alternative 1B. Emissions and associated health risks from exposure to
 38 localized PM under Alternative 1B would therefore be representative of emissions and health risks
 39 generated by Alternative 6B. As shown in Table 22-35, concentrations of particulate matter would
 40 not exceed BAAQMD's annual PM2.5 threshold and consequently would not result in an adverse
 41 effect to human health.

1 **CEQA Conclusion:** Respirable particulates pose a human health hazard by bypassing the defenses
 2 within the mucous ciliary system and entering deep lung tissue. Construction of Alternative 6B
 3 would result in PM_{2.5} concentrations at receptor locations that are below the significance
 4 thresholds established by the BAAQMD. As such, localized particulate matter concentrations at
 5 analyzed receptors would not result in significant human health impacts. No mitigation is required.

6 **Impact AQ-12: Exposure of Sensitive Receptors to Health Hazards from Localized Particulate**
 7 **Matter in Excess of SJVAPCD's Health-Based Concentration Thresholds**

8 **NEPA Effects:** Construction activity required for Alternative 6B within the SJVAPCD was assumed to
 9 equal activity required for Alternative 1B. Emissions and associated health risks from exposure to
 10 localized PM under Alternative 1B would therefore be representative of emissions and health risks
 11 generated by Alternative 6B.

12 As shown in Table 22-36, concentrations of PM₁₀ and PM_{2.5} would exceed SJVAPCD's 24-hour
 13 thresholds, even with implementation of environmental commitments (see Appendix 3B,
 14 *Environmental Commitments*). Receptors exposed to PM₁₀ and PM_{2.5} concentrations in excess of
 15 SMAQMD's threshold could experience increased risk for adverse human health effects. Mitigation
 16 Measure AQ-9 is available to address this effect.

17 **CEQA Conclusion:** Respirable particulates pose a human health hazard by bypassing the defenses
 18 within the mucous ciliary system and entering deep lung tissue. Construction of Alternative 6B
 19 would result in the short-term exposure of receptors to PM₁₀ and PM_{2.5} concentrations that exceed
 20 SJVAPCD threshold. This would be a significant impact. Mitigation Measure AQ-9 outlines a tiered
 21 strategy to reduce PM₁₀ concentrations and public exposure to a less-than-significant level.

22 **Mitigation Measure AQ-9: Implement Measures to Reduce Re-Entrained Road Dust and**
 23 **Receptor Exposure to PM_{2.5} and PM₁₀**

24 Please see Mitigation Measure AQ-9 under Impact AQ-9 in the discussion of Alternative 1A.

25 **Impact AQ-13: Exposure of Sensitive Receptors to Health Hazards from Localized Carbon**
 26 **Monoxide**

27 **NEPA Effects:** Construction activity required for Alternative 6B would be equal to activity required
 28 for Alternative 1B. Accordingly, the potential for Alternative 6B to result in CO hot-spots during
 29 construction would be the same as Alternative 1B. Given that construction activities typically do not
 30 result in CO hot-spots, onsite concentrations must comply with OSHA standards, and CO levels
 31 dissipate as a function of distance, equipment-generated CO emissions (see Table 22-31) are not
 32 anticipated to result in adverse health hazards to sensitive receptors. Refer to Impact AQ-13 under
 33 Alternative 1B.

34 Traffic associated with construction may contribute to increase roadway congestion, which could
 35 lead to conditions conducive to CO hot-spot formation. As shown in Table 19-17, the highest peak
 36 hour traffic volumes under BPBGPP—11,968 vehicles per hour—would occur on westbound
 37 Interstate 80 between Suisun Valley Road and State Route 12. This is about half of the congested
 38 traffic volume modeled by BAAQMD (24,000 vehicles per hour) that would be needed to contribute
 39 to a localized CO hot-spot, and less than half of the traffic volume modeled by SMAQMD (31,600
 40 vehicles per hour). Accordingly, construction traffic is not anticipated to result in adverse health
 41 hazards to sensitive receptors.

1 **CEQA Conclusion:** Continuous engine exhaust may elevate localized CO concentrations. Receptors
 2 exposed to these CO “hot-spots” may have a greater likelihood of developing adverse health effects.
 3 Construction sites are less likely to result in localized CO hot-spots due to the nature of construction
 4 activities (Sacramento Metropolitan Air Quality Management District 2014), which normally utilize
 5 diesel-powered equipment for intermittent or short durations. Moreover, construction sites must
 6 comply with the OSHA CO exposure standards for onsite workers. Accordingly, given that
 7 construction activities typically do not result in CO hot-spots, onsite concentrations must comply
 8 with OSHA standards, and CO levels dissipate as a function of distance, equipment-generated CO
 9 emissions are not anticipated to result in significant health hazards to sensitive receptors. Similarly,
 10 peak-hour construction traffic on local roadways would not exceed BAAQMD’s or SMAQMD’s
 11 conservative screening criteria for the formation potential CO hot-spots. This impact would be less
 12 than significant. No mitigation is required.

13 **Impact AQ-14: Exposure of Sensitive Receptors to Health Hazards from Diesel Particulate**
 14 **Matter in Excess of SMAQMD’s Chronic Non-Cancer and Cancer Risk Thresholds**

15 **NEPA Effects:** Construction activity required for Alternative 6B within the SMAQMD was assumed to
 16 equal activity required for Alternative 1B. Emissions and resulting health risk generated by
 17 Alternative 1B would therefore be representative of emissions and health risk generated by
 18 Alternative 6B. As shown in Table 22-37, Alternative 1B would not exceed the SMAQMD’s chronic
 19 non-cancer or cancer thresholds and, thus, would not expose sensitive receptors to substantial
 20 pollutant concentrations. Therefore, this alternative’s effect of exposure of sensitive receptors to
 21 DPM emissions and their health hazards during construction would not be adverse.

22 **CEQA Conclusion:** DPM generated during construction poses inhalation-related chronic non-cancer
 23 hazard and cancer risk if adjacent receptors are exposed to significant concentrations for prolonged
 24 durations. The DPM generated during Alternative 6B construction would not exceed the SMAQMD’s
 25 chronic non-cancer or cancer thresholds, and thus would not expose sensitive receptors to
 26 substantial pollutant concentrations. Therefore, this impact for DPM emissions would be less than
 27 significant. No mitigation is required.

28 **Impact AQ-15: Exposure of Sensitive Receptors to Health Hazards from Diesel Particulate**
 29 **Matter in Excess of YSAQMD’s Chronic Non-Cancer and Cancer Risk Thresholds**

30 **NEPA Effects:** Construction activity required for Alternative 6B within the YSAQMD was assumed to
 31 equal activity required for Alternative 1B. Emissions and associated health risks from localized
 32 exposure to DPM under Alternative 1B would therefore be representative of emissions and health
 33 risks generated by Alternative 6B. As shown in Table 22-38, Alternative 1B would not exceed the
 34 YSAQMD’s chronic non-cancer or cancer thresholds and, thus, would not expose sensitive receptors
 35 to substantial pollutant concentrations. Therefore, this alternative’s effect of exposure of sensitive
 36 receptors to DPM emissions and their health hazards during construction would not be adverse.

37 **CEQA Conclusion:** DPM generated during construction poses inhalation-related chronic non-cancer
 38 hazard and cancer risk if adjacent receptors are exposed to significant concentrations for prolonged
 39 durations. The DPM generated during Alternative 6B construction would not exceed the YSAQMD’s
 40 chronic non-cancer or cancer thresholds, and thus would not expose sensitive receptors to
 41 substantial pollutant concentrations. Therefore, this impact for DPM emissions would be less than
 42 significant. No mitigation is required.

1 **Impact AQ-16: Exposure of Sensitive Receptors to Health Hazards from Diesel Particulate**
 2 **Matter in Excess of BAAQMD's Chronic Non-Cancer and Cancer Risk Thresholds**

3 **NEPA Effects:** Construction activity required for Alternative 6B was assumed to equal activity
 4 required for Alternative 1B. Emissions and associated health risks from exposure to localized DPM
 5 under Alternative 1B would therefore be representative of emissions and health risks generated by
 6 Alternative 6B. As shown in Table 22-39, Alternative 1B would not exceed the BAAQMD's chronic
 7 non-cancer or cancer thresholds and, thus, would not expose sensitive receptors to substantial
 8 pollutant concentrations. Therefore, this alternative's effect of exposure of sensitive receptors to
 9 DPM emissions and their health hazards during construction would not be adverse.

10 **CEQA Conclusion:** DPM generated during construction poses inhalation-related chronic non-cancer
 11 hazard and cancer risk if adjacent receptors are exposed to significant concentrations for prolonged
 12 durations. The health hazards resulting from DPM generated by Alternative 6B would not exceed the
 13 BAAQMD's chronic non-cancer or cancer thresholds, and thus would not expose sensitive receptors
 14 to substantial pollutant concentrations. Therefore, this impact for DPM health hazards would be less
 15 than significant. No mitigation is required.

16 **Impact AQ-17: Exposure of Sensitive Receptors to Health Hazards in Excess of SJVAPCD's**
 17 **Health-Risk Assessment Thresholds**

18 **NEPA Effects:** Construction activity required for Alternative 6B was assumed to equal activity
 19 required for Alternative 2B. Emissions and associated health risks from exposure to localized DPM
 20 under Alternative 1B would therefore be representative of emissions and health risks generated by
 21 Alternative 6B. As shown in Table 22-40, chronic risk under Alternative 1B would be below the
 22 SJVAPCD's significance thresholds. However, cancer risk would exceed SJVAPCD's cancer risk
 23 significance threshold, even with implementation of environmental commitments (see Appendix 3B,
 24 *Environmental Commitments*). Therefore, this alternative's effect of exposure of sensitive receptors
 25 to DPM-related health hazards during construction would be adverse.

26 Mitigation Measure AQ-16 would be available to reduce exposure to substantial cancer risk by
 27 relocating affected receptors. Although Mitigation Measure AQ-16 would reduce the severity of this
 28 effect, the BDCP proponents are not solely responsible for implementation of the measure. If a
 29 landowner chooses not to accept DWR's offer of relocation assistance, an adverse effect in the form
 30 excess cancer risk above air district thresholds would occur. Therefore, this effect would be adverse.
 31 If, however, all landowners accept DWR's offer of relocation assistance, effects would not be
 32 adverse.

33 **CEQA Conclusion:** DPM generated during construction poses inhalation-related chronic non-cancer
 34 hazard and cancer risk if adjacent receptors are exposed to significant concentrations for prolonged
 35 durations. The DPM generated during Alternative 6B construction would not exceed the SJVAPCD's
 36 chronic non-cancer hazard threshold; however, it would exceed the SJVAPCD's cancer thresholds.
 37 Therefore, this impact would be significant.

38 Mitigation Measure AQ-16 would be available to reduce exposure to substantial cancer risk by
 39 relocating affected receptors. Although Mitigation Measure AQ-16 would reduce the severity of this
 40 effect, the BDCP proponents are not solely responsible for implementation of the measure. If a
 41 landowner chooses not to accept DWR's offer of relocation assistance, a significant impact in the
 42 form excess cancer risk above air district thresholds would occur. Therefore, this effect would be

1 significant and unavoidable. If, however, all landowners accept DWR's offer of relocation assistance,
2 the impact would be less than significant.

3 **Mitigation Measure AQ-16: Relocate Sensitive Receptors to Avoid Excess Cancer Risk**

4 Please see Mitigation Measure AQ-16 under Impact AQ-16 in the discussion of Alternative 1A.

5 **Impact AQ-18: Exposure of Sensitive Receptors to *Coccidioides immitis* (Valley Fever)**

6 **NEPA Effects:** As discussed under Alternative 1A, earthmoving activities during construction could
7 release *C. immitis* spores if filaments are present and other soil chemistry and climatic conditions
8 are conducive to spore development. Receptors adjacent to the construction area may therefore be
9 exposed to increase risk of inhaling *C. immitis* spores and subsequent development of Valley Fever.
10 Dust-control measures are the primary defense against infection (United States Geological Survey
11 2000). Implementation of advanced air-district recommended fugitive dust controls outlined in
12 Appendix 3B, *Environmental Commitments*, would avoid dusty conditions and reduce the risk of
13 contracting Valley Fever through routine watering and other controls. Therefore, this alternative's
14 effect of exposure of sensitive receptors to increased Valley Fever risk during construction would
15 not be adverse.

16 **CEQA Conclusion:** Construction of the water conveyance facility would involve earthmoving
17 activities that could release *C. immitis* spores if filaments are present and other soil chemistry and
18 climatic conditions are conducive to spore development. Receptors adjacent to the construction area
19 may therefore be exposed to increase risk of inhaling *C. immitis* spores and subsequent development
20 of Valley Fever. Implementation of air-district recommended fugitive dust controls outlined in
21 Appendix 3B, *Environmental Commitments*, would avoid dusty conditions and reduce the risk of
22 contracting Valley Fever through routine watering and other controls. Therefore, this impact would
23 be less than significant. No mitigation is required.

24 **Impact AQ-19: Creation of Potential Odors Affecting a Substantial Number of People during** 25 **Construction or Operation of the Proposed Water Conveyance Facility**

26 **NEPA Effects:** As discussed under Alternative 1A, odors from construction activities would be
27 localized and generally confined to the immediate area surrounding the construction site. Moreover,
28 odors would be temporary and localized, and they would cease once construction activities have
29 been completed. Thus, it is not anticipated that construction of CM1 would create objectionable
30 odors from construction equipment or asphalt paving.

31 Construction of the water conveyance facility would require removal of subsurface material during
32 tunnel excavation and sediment removal. As discussed under Alternative 1A, geotechnical tests
33 indicate that VOC levels in Plan Area soils are below the method detection limits, indicating that
34 organic decay of exposed RTM and sediment will be relatively low (URS 2014). Moreover, drying
35 and stockpiling of the removed RTM and sediment will occur under aerobic conditions, which will
36 further limit any potential decomposition and associated malodorous products. Accordingly, it is not
37 anticipated that tunnel and sediment excavation would create objectionable odors.

38 Typical facilities known to produce odors include landfills, wastewater treatment plants, food
39 processing facilities, and certain agricultural activities. Alternative 6B would not result in the
40 addition of facilities associated with odors, and as such, long-term operation of the water
41 conveyance facility would not result in objectionable odors.

1 **CEQA Conclusion:** Alternative 6B would not result in the addition of major odor producing facilities.
 2 Diesel emissions during construction could generate temporary odors, but these would quickly
 3 dissipate and cease once construction is completed. Likewise, potential odors generated during
 4 asphalt paving would be addressed through mandatory compliance with air district rules and
 5 regulations. While tunnel excavation would unearth substantial quantities of RTM, geotechnical
 6 tests indicate that soils in the Plan Area have relatively low organic constituents. Moreover, drying
 7 and stockpiling of the removed RTM will occur under aerobic conditions, which will further limit
 8 any potential decomposition and associated malodorous products. Accordingly, the impact of
 9 exposure of sensitive receptors to potential odors during construction would be less than
 10 significant. No mitigation is required.

11 **Impact AQ-20: Generation of Criteria Pollutants in the Excess of Federal *De Minimis***
 12 **Thresholds from Construction and Operation and Maintenance of the Proposed Water**
 13 **Conveyance Facility**

14 **NEPA Effects:** As discussed above, emissions generated by Alternative 1B within the SFNA, SJVAB,
 15 and SFBAAB would be representative of emissions generated by Alternative 6B (refer to Table 22-
 16 41).

17 **Sacramento Federal Nonattainment Area**

18 As shown in Table 22-41, implementation of Alternative 1B (and thus Alternative 6B) would exceed
 19 the following SFNA federal *de minimis* thresholds:

- 20 ● ROG: 2023–2024
- 21 ● NO_x: 2018–2028
- 22 ● PM10: 2024

23 ROG and NO_x are precursors to ozone and NO_x is a precursor to PM, for which the SFNA is in
 24 nonattainment for the NAAQS. Sacramento County is also a maintenance area for the PM10 NAAQS.
 25 Since project emissions exceed the federal *de minimis* thresholds for ROG, NO_x, and PM10, a general
 26 conformity determination must be made to demonstrate that total direct and indirect emissions of
 27 ROG, NO_x, and PM10 would conform to the appropriate SFNA SIP for each year of construction in
 28 which the *de minimis* thresholds are exceeded.

29 NO_x is also a precursor to PM and can contribute to PM formation. As discussed above, Sacramento
 30 County is currently designated maintenance for the PM10 NAAQS and portions of the SVAB are
 31 designated nonattainment for the PM2.5 NAAQS. NO_x emissions in excess of 100 tons per year in
 32 Sacramento County trigger a secondary PM10 precursor threshold, whereas NO_x emissions in excess
 33 of 100 tons per year in the SVAB trigger a secondary PM2.5 precursor threshold. Since NO_x
 34 emissions can contribute to PM formation, NO_x emissions in excess of these secondary precursor
 35 thresholds could conflict with the applicable PM10 and PM2.5 SIPs. Accordingly, NO_x offsets pursued
 36 for the purposes of general conformity for those years in which NO_x emissions exceed 100 tons must
 37 occur within the federally designated PM2.5 nonattainment and PM10 maintenance areas of the
 38 SVAB.

39 As shown in Table 22-31, NO_x emissions generated by construction activities in SMAQMD
 40 (Sacramento County) would exceed 100 tons per year between 2019 and 2027. The project
 41 therefore triggers the secondary PM10 precursor threshold, requiring all NO_x offsets for 2019
 42 through 2027 to occur within Sacramento County.

1 Given the magnitude of NO_x emissions and the limited geographic scope available for offsets in 2019
 2 through 2027 (Sacramento County), neither Mitigation Measures AQ-1a nor 1b could feasibly reduce
 3 NO_x emissions to net zero for the purposes of general conformity.⁵⁷ This impact would be adverse.
 4 In the event that Alternative 6B is selected as the APA, Reclamation, USFWS, and NMFS would need
 5 to demonstrate that conformity is met for NO_x and secondary PM₁₀ formation through a local air
 6 quality modeling analysis (i.e., dispersion modeling) or other acceptable methods to ensure project
 7 emissions do not cause or contribute to any new violations of the NAAQS or increase the frequency
 8 or severity of any existing violations.

9 **Mitigation Measure AQ-1a: Mitigate and Offset Construction-Generated Criteria Pollutant**
 10 **Emissions within the SFNA to Net Zero (0) for Emissions in Excess of General Conformity**
 11 ***De Minimis* Thresholds (Where Applicable) and to Quantities below Applicable CEQA**
 12 **Thresholds for Other Pollutants**

13 Please see Mitigation Measure AQ-1a under Impact AQ-1 in the discussion of Alternative 1A.

14 **Mitigation Measure AQ-1b: Develop an Alternative or Complementary Offsite Mitigation**
 15 **Program to Mitigate and Offset Construction-Generated Criteria Pollutant Emissions**
 16 **within the SFNA to Net Zero (0) for Emissions in Excess of General Conformity *De Minimis***
 17 **Thresholds (Where Applicable) and to Quantities below Applicable CEQA Thresholds for**
 18 **Other Pollutants**

19 Please see Mitigation Measure AQ-1b under Impact AQ-1 in the discussion of Alternative 1A.

20 ***San Joaquin Valley Air Basin***

21 As shown in Table 22-41, implementation of Alternative 1B (and thus Alternative 6B) would exceed
 22 SJVAB federal *de minimis* thresholds for the following pollutants and years.

- 23 ● ROG: 2018–2024
- 24 ● NO_x: 2018–2024
- 25 ● PM₁₀: 2019

26 ROG and NO_x are precursors to ozone and NO_x is a precursor to PM, for which the SJVAB is in
 27 nonattainment for the NAAQS. Likewise, the SJVAB is current classified as a maintenance area for
 28 PM₁₀. Since project emissions exceed the federal *de minimis* threshold for ROG, NO_x, and PM₁₀, a
 29 general conformity determination must be made to demonstrate that total direct and indirect
 30 emissions would conform to the appropriate SJVAB SIPs for each year of construction for which the
 31 *de minimis* thresholds are exceed.

32 NO_x is also a precursor to PM and can contribute to PM formation. As discussed above, the SJVAB is
 33 currently designated maintenance for the PM₁₀ NAAQS and nonattainment for the PM_{2.5} NAAQS.
 34 NO_x emissions in excess of 100 tons per year trigger a secondary PM precursor threshold, and could
 35 conflict with the applicable PM₁₀ and PM_{2.5} SIPs. As shown in Table 22-41, NO_x emissions

⁵⁷ The secondary PM precursor thresholds are triggered through the General Conformity Regulation (40 CFR 93.153 (a)(1)). Accordingly, confinement of the geographic scope for available offsets only applies to the General Conformity determination and does not influence mitigation feasibility for Impacts AQ-1 or AQ-28.

1 generated by construction activities in the SJVAB would exceed 100 tons per year between 2019 and
 2 2022. NO_x offsets pursued for the purposes of general conformity for those years in which NO_x
 3 emissions exceed 100 tons must occur within the federally designated PM2.5 nonattainment and
 4 PM10 maintenance areas of the SJVAB, which are consistent with the larger nonattainment
 5 boundary for ozone.

6 As shown in Appendix 22E, *General Conformity Determination*, Attachment 22E-1, SJVAPCD confirms
 7 that sufficient emissions reduction credits would be available to fully offset ROG, NO_x, and PM10
 8 emissions in excess of the federal *de minimis* thresholds zero through implementation of Mitigation
 9 Measures AQ-4a and 4b. Mitigation Measures AQ-4a and 4b will ensure the requirements of the
 10 mitigation and offset program are implemented and conformity requirements for ROG, NO_x, and
 11 PM10 are met, should Alternative 6B be selected as the APA.

12 **Mitigation Measure AQ-4a: Mitigate and Offset Construction-Generated Criteria Pollutant**
 13 **Emissions within SJVAPCD/SJVAB to Net Zero (0) for Emissions in Excess of General**
 14 **Conformity *De Minimis* Thresholds (Where Applicable) and to Quantities below**
 15 **Applicable SJVAPCD CEQA Thresholds for Other Pollutants**

16 Please see Mitigation Measure AQ-4a under Impact AQ-4 in the discussion of Alternative 1A.

17 **Mitigation Measure AQ-4b: Develop an Alternative or Complementary Offsite Mitigation**
 18 **Program to Mitigate and Offset Construction-Generated Criteria Pollutant Emissions**
 19 **within the SJVAPCD/SJVAB to Net Zero (0) for Emissions in Excess of General Conformity**
 20 ***De Minimis* Thresholds (Where Applicable) and to Quantities below Applicable SJVAPCD**
 21 **CEQA Thresholds for Other Pollutants**

22 Please see Mitigation Measure AQ-4b under Impact AQ-4 in the discussion of Alternative 1A.

23 ***San Francisco Bay Area Air Basin***

24 As shown in Table 22-41, implementation of the Alternative 1B (and thus Alternative 6B) would not
 25 exceed any of the SFBAAB federal *de minimis* thresholds. Accordingly, a general conformity
 26 determination is not required as total direct and indirect emissions of NO_x would conform to the
 27 appropriate SFBAAB SIPs.

28 ***CEQA Conclusion:*** SFNA and SJVAB are classified as nonattainment or maintenance areas with
 29 regard to the ozone and PM10 NAAQS, and the impact of increases in criteria pollutant emissions
 30 above the air basin *de minimis* thresholds could conflict with or obstruct implementation of the
 31 applicable air quality plans. Since construction emissions in the SFNA and SJVAB would exceed the
 32 *de minimis* thresholds for ROG, NO_x, and PM10, this impact would be significant.

33 Mitigation Measures AQ-4a and AQ-4b would ensure project emissions would not result in an
 34 increase in regional ROG, NO_x, or PM10 in the SJVAB. These measures would therefore ensure total
 35 direct and indirect ROG, NO_x, and PM10 emissions generated by the project would conform to the
 36 appropriate SJVAB SIPs by offsetting the action's emissions in the same or nearby area to net zero.
 37 Accordingly, impacts would be less than significant with mitigation in the SJVAB.

38 Although Mitigation Measures AQ-1a and AQ-1b would reduce NO_x in the SFNA, given the magnitude
 39 of NO_x emissions and the limited geographic scope available for offsets (Sacramento County),
 40 neither measure could feasibly reduce NO_x emissions to net zero for the purposes of general
 41 conformity. This impact would be significant and unavoidable in the SFNA.

1 Emissions generated within the SFBAAB would not exceed the SFBAAB de minimis thresholds and
2 would therefore conform to the appropriate SFBAAB SIPs. No mitigation is required.

3 **Impact AQ-21: Generation of Cumulative Greenhouse Gas Emissions during Construction of** 4 **the Proposed Water Conveyance Facility**

5 **NEPA Effects:** Construction activity required for Alternative 6B was assumed to equal activity
6 required for Alternative 1B. Emissions generated by Alternative 1B would therefore be
7 representative of emissions generated by Alternative 6B. As shown in Table 22-42, construction of
8 Alternative 6B would generate a total of 2.0 million metric tons of GHG emissions. As discussed in
9 section 22.3.2, *Determination of Effects*, any increase in emissions above net zero associated with
10 construction of the BDCP water conveyance features would be adverse. Accordingly, this effect
11 would be adverse. Mitigation Measure AQ-21, which would develop a GHG Mitigation Program to
12 reduce construction-related GHG emissions to net zero, is available address this effect.

13 **CEQA Conclusion:** Construction of Alternative 6B would generate a total of 2.0 million metric tons of
14 GHG emissions. This is equivalent to adding 427,000 typical passenger vehicles to the road during
15 construction (U.S. Environmental Protection Agency 2014e). As discussed in section 22.3.2,
16 *Determination of Effects*, any increase in emissions above net zero associated with construction of
17 the BDCP water conveyance features would be significant. Mitigation Measure AQ-21 would develop
18 a GHG Mitigation Program to reduce construction-related GHG emissions to net zero. Accordingly,
19 this impact would be less-than-significant with implementation of Mitigation Measure AQ-21.

20 **Mitigation Measure AQ-21: Develop and Implement a GHG Mitigation Program to Reduce** 21 **Construction Related GHG Emissions to Net Zero (0)**

22 Please see Mitigation Measure AQ-21 under Impact AQ-21 in the discussion of Alternative 1A.

23 **Impact AQ-22: Generation of Cumulative Greenhouse Gas Emissions from Operation and** 24 **Maintenance of the Proposed Water Conveyance Facility and Increased Pumping**

25 **NEPA Effects:** Operation of Alternative 6B would generate direct and indirect GHG emissions.
26 Sources of direct emissions include heavy-duty equipment, on road crew trucks, and employee
27 vehicle traffic. Indirect emissions would be generated predominantly by electricity consumption
28 required for pumping as well as, maintenance, lighting, and other activities.

29 Table 22-127 summarizes long-term operational GHG emissions associated with operations,
30 maintenance, and increased SWP pumping. Emissions were quantified for both ELT and LLT
31 conditions, although activities would take place annually until project decommissioning. Emissions
32 include state mandates to reduce GHG emissions (described in Impact AQ-21) are presented (there
33 are no BDCP specific operational environmental commitments). Total CO₂e emissions are compared
34 to both the No Action Alternative (NEPA point of comparison) and Existing Conditions (CEQA
35 baseline). As discussed in Section 22.3.1.2, equipment emissions are assumed to be zero under both
36 the No Action Alternative (NEPA point of comparison) and Existing Conditions (CEQA baseline). The
37 equipment emissions presented in Table 22-127 are therefore representative of project impacts for
38 both the NEPA and CEQA analysis.

1 **Table 22-127. GHG Emissions from Operation, Maintenance, and Increased SWP Pumping, Alternative**
 2 **6B (metric tons/year)**

Condition	Equipment CO ₂ e	Electricity CO ₂ e		Total CO ₂ e	
		NEPA Point of Comparison	CEQA Baseline	NEPA Point of Comparison	CEQA Baseline
ELT	436	-	-105,213	-	-104,778
LLT	418	-18,661	-44,927	-18,243	-44,508

Note: The *NEPA point of comparison* compares total CO₂e emissions after implementation of Alternative 6B to the No Action Alternative, whereas the *CEQA baseline* compares total CO₂e emissions to Existing Conditions. Negative values represent a net GHG reduction.

3
 4 Table 22-45 summarizes equipment CO₂e emissions that would be generated in the BAAQMD,
 5 SMAQMD, and SJVAPCD (no operational emissions would be generated in the YSAQMD). The table
 6 does not include emissions from concrete absorption or SWP pumping as these emissions would be
 7 generated by power plants located throughout the state (see discussion preceding this impact
 8 analysis). GHG emissions presented in Table 22-45 are therefore provided for information purposes
 9 only.

10 **SWP Operational and Maintenance GHG Emissions Analysis**

11 Alternative 6B would not add any additional net electricity demand to operation of the SWP and
 12 would in fact result in a net reduction in electricity demand (see Table 22-127). Therefore, there will
 13 be no impact on SWP operational emissions.

14 A small amount of additional GHG emissions from equipment would be emitted as a result of the
 15 maintenance of new facilities associated with Alternative 6B (Table 22-127). Emissions from
 16 additional maintenance activities would become part of the overall DWR maintenance program for
 17 the SWP and would be managed under DWR's CAP.

18 The CAP sets forth DWR's plan to manage its activities and operations to achieve its GHG emissions
 19 reduction goals. The CAP commits DWR to monitoring its emissions each year and evaluating its
 20 emissions every five years to determine whether it is on a trajectory to achieve its GHG emissions
 21 reduction goals. If it appears that DWR will not meet the GHG emission reduction goals established
 22 in the plan, DWR may make adjustments to existing emissions reduction measures, devise new
 23 measures to ensure achievement of the goals, or take other action.

24 Consistent with the analysis contained in the CAP and associated Initial Study and Negative
 25 Declaration for the CAP, BDCP Alternative 6B would not adversely affect DWR's ability to achieve
 26 the GHG emissions reduction goals set forth in the CAP. Further, Alternative 6B would not conflict
 27 with any of DWR's specific action GHG emissions reduction measures and implements all applicable
 28 project level GHG emissions reduction measures as set forth in the CAP. BDCP Alternative 6B is
 29 therefore consistent with the analysis performed in the CAP. There would be no adverse effect.

30 **CEQA Conclusion:** SWP GHG emissions currently are below 1990 levels and achievement of the
 31 goals of the CAP means that total DWR GHG emissions will be reduced to 50% of 1990 levels by
 32 2020 and to 80% of 1990 levels by 2050. The implementation of BDCP Alternative 6B would not
 33 affect DWR's established emissions reduction goals or baseline (1990) emissions and therefore
 34 would not result in a change in total DWR emissions that would be considered significant. Prior

1 adoption of the CAP by DWR already provides a commitment on the part of DWR to make all
 2 necessary modifications to DWR's REPP (as described above) or any other GHG emission reduction
 3 measure in the CAP that are necessary to achieve DWR's GHG emissions reduction goals. Therefore
 4 no amendment to the approved CAP is necessary to ensure the occurrence of the additional GHG
 5 emissions reduction activities needed to account for BDCP-related operational or maintenance
 6 emissions. The effect of BDCP Alternative 6B with respect to GHG emissions is less than cumulatively
 7 considerable and therefore less than significant. No mitigation is required.

8 **Impact AQ-23: Generation of Cumulative Greenhouse Gas Emissions from Increased CVP**
 9 **Pumping as a Result of Implementation of CM1**

10 **NEPA Effects:** As previously discussed, DWR's CAP cannot be used to evaluate environmental
 11 impacts associated with increased CVP pumping, as emissions associated with CVP are not under
 12 DWR's control and are not included in the CAP. Accordingly, GHG emissions resulting from increased
 13 CVP energy use are evaluated separately from GHG emissions generated as a result of SWP energy
 14 use.

15 Under Alternative 6B, operation of the CVP yields the generation of clean, GHG emissions-free,
 16 hydroelectric energy. This electricity is sold into the California electricity market or directly to
 17 energy users. Analysis of the existing and future no action condition indicates that the CVP generates
 18 and will continue to generate all of the electricity needed to operate the CVP system and
 19 approximately 3,500 GWh of excess hydroelectric energy that would be sold to energy users
 20 throughout California.

21 Implementation of Alternative 6B is neither expected to require additional electricity over the No
 22 Action Alternative nor reduce the amount of excess CVP generation available for sale from the CVP
 23 to electricity users. The CVP is operated using energy generated at CVP hydroelectric facilities and
 24 therefore results in no GHG emissions. Rather, implementation of Alternative 6B would reduce GHG
 25 emissions by 24,398 to 31,398 metric tons of CO₂e, relative to the No Action Alternative (depending
 26 on whether the RPS is assumed in the emissions calculations). Accordingly, there would be no
 27 adverse effect.

28 **CEQA Conclusion:** Implementation of Alternative 6B is neither expected to require additional
 29 electricity over Existing Conditions nor reduce the amount of excess CVP generation available for
 30 sale from the CVP to electricity users. All power supplied to CVP facilities would continue to be
 31 supplied by GHG emissions-free hydroelectricity and there would be no increase in GHG emissions
 32 over Existing Conditions as a result of CVP operations. The impact would be less than significant and
 33 no mitigation is required.

34 **Impact AQ-24: Generation of Regional Criteria Pollutants from Implementation of CM2–CM11**

35 **NEPA Effects:** Table 22-29 summarizes potential construction and operational emissions that may
 36 be generated by implementation of CM2–CM11. See the discussion of Impact AQ-24 under
 37 Alternative 1A.

38 Criteria pollutants from restoration and enhancement actions could exceed applicable general
 39 conformity *de minimis* levels and applicable local thresholds. The effect would vary according to the
 40 equipment used in construction of a specific conservation measure, the location, the timing of the
 41 actions called for in the conservation measure, and the air quality conditions at the time of
 42 implementation; these effects would be evaluated and identified in the subsequent project-level

1 environmental analysis conducted for the CM2–CM11 restoration and enhancement actions. The
 2 effect of increases in emissions during implementation of CM2–CM11 in excess of applicable general
 3 conformity *de minimis* levels and air district regional thresholds (Table 22-8) could violate air basin
 4 SIPs and worsen existing air quality conditions. Mitigation Measure AQ-24 would be available to
 5 reduce this effect, but emissions would still be adverse.

6 **CEQA Conclusion:** Construction and operational emissions associated with the restoration and
 7 enhancement actions would result in a significant impact if the incremental difference, or increase,
 8 relative to Existing Conditions exceeds the applicable local air district thresholds shown in Table 22-
 9 8; these effects are expected to be further evaluated and identified in the subsequent project-level
 10 environmental analysis conducted for the CM2–CM11 restoration and enhancement actions.
 11 Mitigation Measure AQ-24 would be available to reduce this effect, but may not be sufficient to
 12 reduce emissions below applicable air quality management district thresholds (see Table 22-8).
 13 Consequently, this impact would be significant and unavoidable.

14 **Mitigation Measure AQ-24: Develop an Air Quality Mitigation Plan (AQMP) to Ensure Air**
 15 **District Regulations and Recommended Mitigation are Incorporated into Future**
 16 **Conservation Measures and Associated Project Activities**

17 Please see Mitigation Measure AQ-24 under Impact AQ-24 in the discussion of Alternative 1A.

18 **Impact AQ-25: Exposure of Sensitive Receptors to Health Hazards from Localized Particulate**
 19 **Matter, Carbon Monoxide, and Diesel Particulate Matter from Implementation of CM2–CM11**

20 **NEPA Effects:** The potential for Alternative 6B to expose sensitive receptors increased health
 21 hazards from localized PM, CO, and DPM would be similar to Alternative 1A. Activities shown in
 22 Table 22-29 with the greatest potential to have short or long-term air quality impacts are also
 23 anticipated to have the greatest potential to expose receptors to substantial pollutant
 24 concentrations. The effect would vary according to the equipment used, the location and timing of
 25 the actions called for in the conservation measure, the meteorological and air quality conditions at
 26 the time of implementation, and the location of receptors relative to the emission source. Potential
 27 health effects would be evaluated and identified in the subsequent project-level environmental
 28 analysis conducted for the CM2–CM11 restoration and enhancement actions.

29 The effect of increases in PM, CO, or DPM (cancer and non-cancer-risk) in excess of applicable air
 30 district thresholds (Table 22-8) at receptor locations could result in adverse health impacts.
 31 Mitigation Measures AQ-24 and AQ-25 would be available to reduce this effect.

32 **CEQA Conclusion:** Construction and operational emissions associated with the restoration and
 33 enhancement actions under Alternative 6B would result in a significant impact if PM, CO, or DPM
 34 (cancer and non-cancer-risk) concentrations at receptor locations exceed the applicable local air
 35 district thresholds shown in Table 22-8; these effects are expected to be further evaluated and
 36 identified in the subsequent project-level environmental analysis conducted for the CM2–CM11
 37 restoration and enhancement actions. Mitigation Measures AQ-24 and AQ-25 would ensure localized
 38 concentrations at receptor locations would be below applicable air quality management district
 39 thresholds (see Table 22-8). Consequently, this impact would be less than significant.

1 **Mitigation Measure AQ-24: Develop an Air Quality Mitigation Plan (AQMP) to Ensure Air**
 2 **District Regulations and Recommended Mitigation are Incorporated into Future**
 3 **Conservation Measures and Associated Project Activities**

4 Please see Mitigation Measure AQ-24 under Impact AQ-24 in the discussion of Alternative 1A.

5 **Mitigation Measure AQ-25: Prepare a Project-Level Health Risk Assessment to Reduce**
 6 **Potential Health Risks from Exposure to Localized DPM and PM Concentrations**

7 Please see Mitigation Measure AQ-25 under Impact AQ-25 in the discussion of Alternative 1A.

8 **Impact AQ-26: Creation of Potential Odors Affecting a Substantial Number of People from**
 9 **Implementation of CM2–CM11**

10 **NEPA Effects:** The potential for Alternative 6B to expose sensitive receptors increased odors would
 11 be similar to Alternative 1A. Accordingly, construction activities associated with CM2-CM11 are not
 12 anticipated to result in nuisance odors. Similarly, while restored land uses associated with the
 13 program have the potential to generate odors from natural processes, the emissions would be
 14 similar in origin and magnitude to the existing land use types in the restored area (e.g., managed
 15 wetlands). Moreover, specific odor effects would be evaluated and identified in the subsequent
 16 project-level environmental analysis conducted for the CM2–CM11 restoration and enhancement
 17 actions. Accordingly, odor-related effects associated with CM2–CM11 would not be adverse.

18 **CEQA Conclusion:** Alternative 6B would not result in the addition of major odor producing facilities.
 19 Diesel emissions during construction could generate temporary odors, but these would quickly
 20 dissipate and cease once construction is completed. Increases in wetland, tidal, and upland habitats
 21 may increase the potential for odors from natural processes. However, the origin and magnitude of
 22 odors would be similar to the existing land use types in the restored area (e.g., managed wetlands).
 23 Moreover, specific odor impacts would be evaluated and identified in the subsequent project-level
 24 environmental analysis conducted for the CM2–CM11 restoration and enhancement actions.
 25 Accordingly, the impact of exposure of sensitive receptors to potential odors would be less than
 26 significant. No mitigation is required.

27 **Impact AQ-27: Generation of Cumulative Greenhouse Gas Emissions from Implementation of**
 28 **CM2–CM11**

29 **NEPA Effects:** CM2–CM11 implemented under Alternative 6B would result in local GHG emissions
 30 from construction equipment and vehicle exhaust, similar to Alternative 1A. Restoration activities
 31 with the greatest potential for emissions include those that break ground and require use of
 32 earthmoving equipment. The type of restoration action and related construction equipment use are
 33 shown in Table 22-29. Implementing CM2–CM11 would also affect long-term sequestration rates
 34 through land use changes, such as conversion of agricultural land to wetlands, inundation of peat
 35 soils, drainage of peat soils, and removal or planting of carbon-sequestering plants.

36 Without additional information on site-specific characteristics associated with each of the
 37 restoration components, a complete assessment of GHG flux from CM2–CM11 is currently not
 38 possible. The effect of carbon sequestration and CH₄ generation would vary by land use type, season,
 39 and chemical and biological characteristics; these effects would be evaluated and identified in the
 40 subsequent project-level environmental analysis conducted for the CM2–CM11 restoration and
 41 enhancement actions. Mitigation Measures AQ-24 and AQ-27 would be available to reduce this

1 effect. However, due to the potential for increases in GHG emissions from construction and land use
2 change, this effect would be adverse.

3 **CEQA Conclusion:** The restoration and enhancement actions under Alternative 6B could result in a
4 significant impact if activities are inconsistent with applicable GHG reduction plans, do not
5 contribute to a lower carbon future, or generate excessive emissions, relative to other projects
6 throughout the state. These effects are expected to be further evaluated and identified in the
7 subsequent project-level environmental analysis conducted for the CM2–CM11 restoration and
8 enhancement actions. Mitigation Measures AQ-24 and AQ-27 would be available to reduce this
9 impact, but may not be sufficient to reduce to a less-than-significant level. Consequently, this impact
10 would be significant and unavoidable.

11 **Mitigation Measure AQ-24: Develop an Air Quality Mitigation Plan (AQMP) to Ensure Air**
12 **District Regulations and Recommended Mitigation are Incorporated into Future**
13 **Conservation Measures and Associated Project Activities**

14 Please see Mitigation Measure AQ-24 under Impact AQ-24 in the discussion of Alternative 1A.

15 **Mitigation Measure AQ-27: Prepare a Land Use Sequestration Analysis to Quantify and**
16 **Mitigate (as Needed) GHG Flux Associated with Conservation Measures and Associated**
17 **Project Activities**

18 Please see Mitigation Measure AQ-27 under Impact AQ-27 in the discussion of Alternative 1A.

19 **22.3.3.13 Alternative 6C—Isolated Conveyance with West Alignment and**
20 **Intakes W1–W5 (15,000 cfs; Operational Scenario D**

21 A total of five intakes would be constructed under Alternative 6C. They would be sited on the west
22 bank of the Sacramento River, opposite the locations identified for the pipeline/tunnel and east
23 alignments. Under this alternative, water would be carried south in a canal along the western side of
24 the Delta to an intermediate pumping plant and then pumped through a tunnel to a continuing canal
25 to the proposed Byron Tract Forebay immediately northwest of Clifton Court Forebay (Figures 3-6
26 and 3-15 in Chapter 3, *Description of Alternatives*).

27 Construction and operation of Alternative 6C would require the use of electricity, which would be
28 supplied by the California electrical grid. Power plants located throughout the state supply the grid
29 with power, which will be distributed to the Study area to meet project demand. Power supplied by
30 statewide power plants will generate criteria pollutants. Because these power plants are located
31 throughout the state, criteria pollutant emissions associated with Alternative 6C electricity demand
32 cannot be ascribed to a specific air basin or air district within the Study area. Criteria pollutant
33 emissions from electricity consumption are therefore provided for informational purposes only and
34 are not included in the impact conclusion.

35 Construction activity required for Alternative 6C was assumed to equal activity required for
36 Alternative 1C. Construction emissions generated by Alternative 1C would therefore be
37 representative of emissions generated by Alternative 6C. Refer to Table 22-47 for a summary of
38 criteria pollutants during construction (years 2016 through 2029) of Alternative 1C that are
39 applicable to this alternative. Operational emissions would be different from Alternative 1C and are
40 provided in Table 22-128. Negative values represent an emissions benefit, relative to the No Action
41 Alternative or Existing Conditions.

1 **Table 22-128. Criteria Pollutant Emissions from Electricity Consumption: Net Project Operations,**
 2 **Alternative 6C (tons/year)^{a,b}**

Year	Analysis	ROG	CO	NO _x	PM10	PM2.5 ^c	SO ₂
ELT	CEQA	-1	-14	-193	-16	-16	-81
LLT	NEPA	-1	-7	-96	-8	-8	-40
LLT	CEQA	-2	-19	-261	-22	-22	-110

NEPA = Compares criteria pollutant emissions after implementation of Alternative 6C to the No Action Alternative.

CEQA = Compares criteria pollutant emissions after implementation of Alternative 6C to Existing Conditions.

^a Emissions assume implementation of RPS (see Appendix 22A, *Air Quality Analysis Methodology*). Power plants that generate electricity for the proposed project would be subject to local air district permitting requirements, including standards to implement BACT to reduce criteria pollutant emissions.

^b Because GHG emissions are cumulative (see Section 22.3.2.1) and not evaluated at the local air basin or air district level, they are discussed in Impacts AQ-21 and AQ-22. The GHG analysis for SWP power utilizes actual and forecasted GHG emissions rates for the SWP system, which differs slightly from the above analysis. Statewide grid average emission factors were utilized for the above analysis as criteria pollutant emission factors for SWP were unavailable. Please also note that the above analysis does not account for additional renewable energy that will be procured through modifications to DWR's REPP (see Impact AQ-22). Accordingly, the emissions results presented above represent a conservative assessment of potential criteria pollutant emissions.

^c Emission factors for PM2.5 are currently unavailable. Consequently, PM2.5 emissions were assumed to equal PM10 emissions. Because PM2.5 represents a fraction of PM10, this approach represents a conservative assessment of PM2.5 emissions from electricity consumption.

3

4 **Impact AQ-1: Generation of Criteria Pollutants in Excess of the SMAQMD Regional Thresholds**
 5 **during Construction of the Proposed Water Conveyance Facility**

6 **NEPA Effects:** Construction activity required for Alternative 6C was assumed to equal activity
 7 required for Alternative 1C. Emissions generated by Alternative 1C would therefore be
 8 representative of emissions generated by Alternative 6C. As shown in Table 22-48, emissions would
 9 exceed SMAQMD's daily NO_x threshold, even with implementation of environmental commitments.

10 Since NO_x is a precursor to ozone and PM, exceedances of SMAQMD's daily NO_x threshold could
 11 impact both regional ozone and PM formation, which could worsen regional air quality and air basin
 12 attainment of the NAAQS and CAAQS.

13 While equipment could operate at any work area identified for this alternative, the highest level of
 14 NO_x emissions in the SMAQMD are expected to occur at those sites where the duration and intensity
 15 of construction activities would be greatest. This includes all intake and intake pumping plant sites
 16 along the west bank of the Sacramento River, as well as the intermediate pumping plant site. See the
 17 discussion of Impact AQ-1 under Alternative 1C.

18 Environmental commitments will reduce construction-related emissions; however, as shown in
 19 Table 22-48, NO_x emissions would still exceed SMAQMD's threshold identified in Table 22-8 and
 20 would result in an adverse effect to air quality.

1 Mitigation Measures AQ-1a and AQ-1b would be available to reduce NO_x emissions, and would thus
2 address regional effects related to secondary ozone and PM formation.

3 **CEQA Conclusion:** NO_x emissions and generated during construction would exceed SMAQMD
4 threshold identified in Table 22-8. Since NO_x is a precursor to ozone and PM, exceedances of
5 SMAQMD's daily NO_x threshold could impact both regional ozone and PM formation. SMAQMD's
6 regional emissions thresholds (Table 22-8) have been adopted to ensure projects do not hinder
7 attainment of the CAAQS or NAAQS. The impact of generating NO_x emissions in excess of local air
8 district thresholds would therefore violate applicable air quality standards in the Study area and
9 could contribute to or worsen an existing air quality conditions. This would be a significant impact.
10 Mitigation Measures AQ-1a and AQ-1b would be available to reduce NO_x emissions to a less-than-
11 significant level by offsetting emissions to quantities below SMAQMD CEQA thresholds (see Table
12 22-8).

13 **Mitigation Measure AQ-1a: Mitigate and Offset Construction-Generated Criteria Pollutant**
14 **Emissions within the SFNA to Net Zero (0) for Emissions in Excess of General Conformity**
15 ***De Minimis* Thresholds (Where Applicable) and to Quantities below Applicable CEQA**
16 **Thresholds for Other Pollutants**

17 Please see Mitigation Measure AQ-1a under Impact AQ-1 in the discussion of Alternative 1A.

18 **Mitigation Measure AQ-1b: Develop an Alternative or Complementary Offsite Mitigation**
19 **Program to Mitigate and Offset Construction-Generated Criteria Pollutant Emissions**
20 **within the SFNA to Net Zero (0) for Emissions in Excess of General Conformity *De Minimis***
21 **Thresholds (Where Applicable) and to Quantities below Applicable CEQA Thresholds for**
22 **Other Pollutants**

23 Please see Mitigation Measure AQ-1b under Impact AQ-1 in the discussion of Alternative 1A.

24 **Impact AQ-2: Generation of Criteria Pollutants in Excess of the YSAQMD Regional Thresholds**
25 **during Construction of the Proposed Water Conveyance Facility**

26 **NEPA Effects:** Construction activity required for Alternative 6C within the YSAQMD was assumed to
27 equal activity required for Alternative 1C. Emissions generated by Alternative 1C would therefore be
28 representative of emissions generated by Alternative 6C. As shown in Table 22-48, emissions would
29 exceed YSAQMD's ROG, NO_x, and PM₁₀ thresholds, even with implementation of environmental
30 commitments (see Appendix 3B, *Environmental Commitments*).

31 Since ROG and NO_x are precursors to ozone and PM, exceedances of SMAQMD's daily ROG and NO_x
32 thresholds could impact both regional ozone and PM formation, which could worsen regional air
33 quality and air basin attainment of the NAAQS and CAAQS. Similarly, exceedances of YSAQMD's
34 PM₁₀ threshold could impede attainment of the NAAQS and CAAQS for PM₁₀.

35 Environmental commitments outlined in Appendix 3B, *Environmental Commitments*, will reduce
36 construction-related emissions; however, as shown in Table 22-48, ROG, NO_x, and PM₁₀ emissions
37 would still exceed the applicable YSAQMD thresholds identified in Table 22-8 and result in an
38 adverse regional effect to air quality. Mitigation Measures AQ-1a and AQ-1b are available to reduce
39 ROG, NO_x, and PM₁₀ emissions, and would thus address regional effects related to secondary ozone
40 and PM formation.

1 **CEQA Conclusion:** Emissions of ROG, NO_x, and PM₁₀ generated during construction would exceed
 2 YSAQMD's regional thresholds identified in Table 22-8. Since ROG and NO_x are precursors to ozone
 3 and PM, exceedances of SMAQMD's daily ROG and NO_x thresholds could impact both regional ozone
 4 and PM formation, which could worsen regional air quality and air basin attainment of the NAAQS
 5 and CAAQS. Similarly, exceedances of YSAQMD's PM₁₀ threshold could impede attainment of the
 6 NAAQS and CAAQS for PM₁₀. YSAQMD's regional emissions thresholds (Table 22-8) have been
 7 adopted to ensure projects do not hinder attainment of the CAAQS or NAAQS. The impact of
 8 generating ROG, NO_x, and PM₁₀ in excess of local air district regional thresholds would therefore
 9 violate applicable air quality standards in the study area and could contribute to or worsen an
 10 existing air quality conditions. This would be a significant impact. Mitigation Measures AQ-1a and
 11 AQ-1b would be available to reduce ROG, NO_x, and PM₁₀ emissions to a less-than-significant level by
 12 offsetting emissions to quantities below YSAQMD CEQA thresholds (see Table 22-8).

13 **Mitigation Measure AQ-1a: Mitigate and Offset Construction-Generated Criteria Pollutant**
 14 **Emissions within the SFNA to Net Zero (0) for Emissions in Excess of General Conformity**
 15 ***De Minimis* Thresholds (Where Applicable) and to Quantities below Applicable CEQA**
 16 **Thresholds for Other Pollutants**

17 Please see Mitigation Measure AQ-1a under Impact AQ-1 in the discussion of Alternative 1A.

18 **Mitigation Measure AQ-1b: Develop an Alternative or Complementary Offsite Mitigation**
 19 **Program to Mitigate and Offset Construction-Generated Criteria Pollutant Emissions**
 20 **within the SFNA to Net Zero (0) for Emissions in Excess of General Conformity *De Minimis***
 21 **Thresholds (Where Applicable) and to Quantities below Applicable CEQA Thresholds for**
 22 **Other Pollutants**

23 Please see Mitigation Measure AQ-1b under Impact AQ-1 in the discussion of Alternative 1A.

24 **Impact AQ-3: Generation of Criteria Pollutants in Excess of the BAAQMD Regional Thresholds**
 25 **during Construction of the Proposed Water Conveyance Facility**

26 **NEPA Effects:** Construction activity required for Alternative 6C was assumed to equal activity
 27 required for Alternative 1C. Emissions generated by Alternative 1C would therefore be
 28 representative of emissions generated by Alternative 6C. As shown in Table 22-48, construction
 29 emissions would exceed BAAQMD's daily ROG and NO_x thresholds, even with implementation of
 30 environmental commitments. All other pollutants would be below air district thresholds and
 31 therefore would not result in an adverse air quality effect.

32 Since ROG and NO_x are precursors to ozone and NO_x is a precursor to PM, exceedances of BAAQMD's
 33 ROG and NO_x thresholds could impact both regional ozone and PM formation, which could worsen
 34 regional air quality and air basin attainment of the NAAQS and CAAQS.

35 While equipment could operate at any work area identified for this alternative, the highest level of
 36 ROG and NO_x emissions in the BAAQMD are expected to occur at those sites where the duration and
 37 intensity of construction activities would be greatest, including the site of the Byron Tract Forebay
 38 adjacent to and northwest of Clifton Court Forebay.

39 Environmental commitments outlined in Appendix 3B, *Environmental Commitments*, will reduce
 40 construction-related emissions; however, as shown in Table 22-48, ROG and NO_x emissions would
 41 still exceed BAAQMD's thresholds identified in Table 22-8 and would result in an adverse effect to

1 air quality. Although Mitigation Measures AQ-3a and AQ-3b would reduce ROG and NO_x, given the
 2 magnitude of estimated emissions, neither measure would reduce emissions below district
 3 thresholds.⁵⁸ Accordingly, this effect would be adverse.

4 **CEQA Conclusion:** Emissions of ROG and NO_x generated during construction would exceed BAAQMD
 5 thresholds identified in Table 22-8. Since ROG and NO_x are precursors to ozone and NO_x is a
 6 precursor to PM, exceedances of BAAQMD's ROG and NO_x thresholds could impact both regional
 7 ozone and PM formation. BAAQMD's regional emissions thresholds (Table 22-8) have been adopted
 8 to ensure projects do not hinder attainment of the CAAQS or NAAQS. The impact of generating
 9 emissions in excess of local air district thresholds would therefore violate applicable air quality
 10 standards in the Study area and could contribute to or worsen an existing air quality conditions.
 11 Although Mitigation Measures AQ-3a and AQ-3b would reduce ROG and NO_x, given the magnitude of
 12 estimated emissions, neither measure would reduce emissions below district thresholds.
 13 Accordingly, this impact would be significant and unavoidable.

14 **Mitigation Measure AQ-3a: Mitigate and Offset Construction-Generated Criteria Pollutant**
 15 **Emissions within BAAQMD/SFBAAB to Net Zero (0) for Emissions in Excess of General**
 16 **Conformity *De Minimis* Thresholds (Where Applicable) and to Quantities below**
 17 **Applicable BAAQMD CEQA Thresholds for Other Pollutants**

18 Please see Mitigation Measure AQ-3a under Impact AQ-3 in the discussion of Alternative 1A.

19 **Mitigation Measure AQ-3b: Develop an Alternative or Complementary Offsite Mitigation**
 20 **Program to Mitigate and Offset Construction-Generated Criteria Pollutant Emissions**
 21 **within the BAAQMD/SFBAAB to Net Zero (0) for Emissions in Excess of General**
 22 **Conformity *De Minimis* Thresholds (Where Applicable) and to Quantities below**
 23 **Applicable BAAQMD CEQA Thresholds for Other Pollutants**

24 Please see Mitigation Measure AQ-3b under Impact AQ-3 in the discussion of Alternative 1A.

25 **Impact AQ-4: Generation of Criteria Pollutants in Excess of the SJVAPCD Regional Thresholds**
 26 **during Construction of the Proposed Water Conveyance Facility**

27 **NEPA Effects:** Construction of Alternative 6C would occur in the YSAQMD SMAQMD, and BAAQMD.
 28 No construction emissions would be generated in the SJVAPCD. Consequently, construction of
 29 Alternative 6C would neither exceed the SJVAPCD regional thresholds of significance nor result in an
 30 adverse effect to air quality.

31 **CEQA Conclusion:** Construction emissions generated by the alternative would not exceed SJVAPCD's
 32 regional thresholds of significance. This impact is would be less than significant.

⁵⁸ The amount of moneys required to achieve sufficient contracts to reduce project emissions below air district thresholds would require immediate and substantial outreach, staffing, and other resources. There are also a number of hurdles related to accelerating equipment turnover and identifying available projects. While the mitigation measure will reduce project emissions, it is unlikely sufficient resources can be identified to reduce emissions by the amount required to achieve a less-than-significant finding.

1 **Impact AQ-5: Generation of Criteria Pollutants in Excess of the SMAQMD Regional Thresholds**
 2 **from Operation and Maintenance of the Proposed Water Conveyance Facility**

3 **NEPA Effects:** Operations and maintenance activities in SMAQMD required for Alternative 6C were
 4 assumed to equal activities required for Alternative 1C. Emissions generated by Alternative 1C
 5 would therefore be representative of emissions generated by Alternative 6C. As shown in Table 22-
 6 49, emissions would not exceed SMAQMD's regional thresholds of significance and there would be
 7 no adverse effect. See the discussion of Impact AQ-5 under Alternative 1C.

8 **CEQA Conclusion:** Emissions generated during operation and maintenance activities would not
 9 exceed SMAQMD regional thresholds for criteria pollutants. SMAQMD's regional emissions
 10 thresholds (Table 22-8) have been adopted to ensure projects do not hinder attainment of the
 11 CAAQS or NAAQS. The impact of generating emissions in excess of local air district would therefore
 12 violate applicable air quality standards in the Study area and could contribute to or worsen an
 13 existing air quality conditions. Because project operations would not exceed SMAQMD regional
 14 thresholds, the impact would be less than significant. No mitigation is required.

15 **Impact AQ-6: Generation of Criteria Pollutants in Excess of the YSAQMD Regional Thresholds**
 16 **from Operation and Maintenance of the Proposed Water Conveyance Facility**

17 **NEPA Effects:** Operations and maintenance activities in YSAQMD required for Alternative 6C were
 18 assumed to equal activities required for Alternative 1C. Emissions generated by Alternative 1C
 19 would therefore be representative of emissions generated by Alternative 6C. As shown in Table 22-
 20 49, emissions would not exceed YSAQMD's regional thresholds of significance and there would be no
 21 adverse effect. See the discussion of Impact AQ-6 under Alternative 1C.

22 **CEQA Conclusion:** Emissions generated during operation and maintenance activities would not
 23 exceed YSAQMD's regional thresholds for criteria pollutants. YSAQMD's regional emissions
 24 thresholds (Table 22-8) have been adopted to ensure projects do not hinder attainment of the
 25 CAAQS. Projects that do not violate YSAQMD's regional thresholds will therefore not conflict with
 26 local, state, and federal efforts to improve regional air quality in the SFNA. The impact would be less
 27 than significant.

28 **Impact AQ-7: Generation of Criteria Pollutants in Excess of the BAAQMD Regional Thresholds**
 29 **from Operation and Maintenance of the Proposed Water Conveyance Facility**

30 **NEPA Effects:** Operations and maintenance activities in BAAQMD required for Alternative 6C were
 31 assumed to equal activities required for Alternative 1C. Emissions generated by Alternative 1C
 32 would therefore be representative of emissions generated by Alternative 6C. As shown in Table 22-
 33 49, emissions would not exceed BAAQMD's regional thresholds of significance and there would be
 34 no adverse effect. See the discussion of Impact AQ-7 under Alternative 1C.

35 **CEQA Conclusion:** Emissions generated during operation and maintenance activities would not
 36 exceed BAAQMD regional thresholds for criteria pollutants. The BAAQMD's regional emissions
 37 thresholds (Table 22-8) have been adopted to ensure projects do not hinder attainment of the
 38 CAAQS or NAAQS. The impact of generating emissions in excess of local air district thresholds would
 39 violate applicable air quality standards in the Study area and could contribute to or worsen an
 40 existing air quality conditions. Because project operations would not exceed BAAQMD regional
 41 thresholds, the impact would be less than significant. No mitigation is required.

1 **Impact AQ-8: Generation of Criteria Pollutants in Excess of the SJVAPCD Regional Thresholds**
 2 **from Operation and Maintenance of the Proposed Water Conveyance Facility**

3 *NEPA Effects:* Alternative 6C would not construct any permanent features in the SJVAPCD that
 4 would require routine operations and maintenance. No operational emissions would be generated
 5 in the SJVAPCD. Consequently, operation of Alternative 6C would neither exceed the SJVAPCD
 6 regional thresholds of significance nor result in an adverse effect to air quality.

7 *CEQA Conclusion:* Alternative 6C would not construct any permanent features in the SJVAPCD that
 8 would require routine operations and maintenance. No operational emissions would be generated
 9 in the SJVAPCD. Consequently, operation of Alternative 6C would not contribute to or worsen
 10 existing air quality conditions in the SJVAPCD. This impact would be less than significant. No
 11 mitigation is required.

12 **Impact AQ-9: Exposure of Sensitive Receptors to Health Hazards from Localized Particulate**
 13 **Matter in Excess of SMAQMD's Health-Based Concentration Thresholds**

14 *NEPA Effects:* Construction activity required for Alternative 6C within the SMAQMD was assumed to
 15 equal activity required for Alternative 1C. Emissions and associated health risks from exposure to
 16 localized PM under Alternative 1C would therefore be representative of emissions and health risks
 17 generated by Alternative 6C.

18 As shown in Table 22-50, concentrations of annual PM₁₀ and PM_{2.5} would be below the SMAQMD's
 19 significance thresholds. However, concentrations of PM₁₀ would exceed SMAQMD's 24-hour PM₁₀
 20 threshold, even with implementation of environmental commitments (see Appendix 3B,
 21 *Environmental Commitments*). Receptors exposed to PM₁₀ concentrations in excess of SMAQMD's
 22 threshold could experience increased risk for adverse human health effects. Mitigation Measure AQ-
 23 9 is available to address this effect.

24 *CEQA Conclusion:* Respirable particulates pose a human health hazard by bypassing the defenses
 25 within the mucous ciliary system and entering deep lung tissue. Construction of Alternative 6C
 26 would result in the short-term exposure of receptors to PM₁₀ concentrations that exceed SMAQMD
 27 threshold. This would be a significant impact. Mitigation Measure AQ-9 outlines a tiered strategy to
 28 reduce PM₁₀ concentrations and public exposure to a less-than-significant level.

29 **Mitigation Measure AQ-9: Implement Measures to Reduce Re-Entrained Road Dust and**
 30 **Receptor Exposure to PM_{2.5} and PM₁₀**

31 Please see Mitigation Measure AQ-9 under Impact AQ-9 in the discussion of Alternative 1A.

32 **Impact AQ-10: Exposure of Sensitive Receptors to Health Hazards from Localized Particulate**
 33 **Matter in Excess of YSAQMD's Health-Based Concentration Thresholds**

34 *NEPA Effects:* Construction activity required for Alternative 6C within the YSAQMD was assumed to
 35 equal activity required for Alternative 1C. Emissions and associated health risks from exposure to
 36 localized PM under Alternative 1C would therefore be representative of emissions and health risks
 37 generated by Alternative 6C. As shown previously in Table 22-51, concentrations of particulate
 38 matter would not exceed YSAQMD's 24-hour and annual PM₁₀ and PM_{2.5} thresholds and
 39 consequently would not result in an adverse effect to human health.

1 **CEQA Conclusion:** Respirable particulates pose a human health hazard by bypassing the defenses
 2 within the mucous ciliary system and entering deep lung tissue. Construction of Alternative 6C
 3 would result in PM_{2.5} and PM₁₀ concentrations at receptor locations that are below the significance
 4 thresholds established by the YSAQMD. As such, localized particulate matter concentrations at
 5 analyzed receptors would not result in significant human health impacts. No mitigation is required.

6 **Impact AQ-11: Exposure of Sensitive Receptors to Health Hazards from Localized Particulate**
 7 **Matter in Excess of BAAQMD's Health-Based Concentration Thresholds**

8 **NEPA Effects:** Construction activity required for Alternative 6C within the BAAQMD was assumed to
 9 equal activity required for Alternative 1C. Emissions and associated health risks from exposure to
 10 localized PM under Alternative 1C would therefore be representative of emissions and health risks
 11 generated by Alternative 6C. As shown in Table 22-52, concentrations of particulate matter would
 12 not exceed BAAQMD's annual PM_{2.5} threshold and consequently would not result in an adverse
 13 effect to human health.

14 **CEQA Conclusion:** Respirable particulates pose a human health hazard by bypassing the defenses
 15 within the mucous ciliary system and entering deep lung tissue. Construction of Alternative 6C
 16 would result in PM_{2.5} concentrations at receptor locations that are below the significance
 17 thresholds established by the BAAQMD. As such, localized particulate matter concentrations at
 18 analyzed receptors would not result in significant human health impacts. No mitigation is required.

19 **Impact AQ-12: Exposure of Sensitive Receptors to Health Hazards from Localized Particulate**
 20 **Matter in Excess of SJVAPCD's Health-Based Concentration Thresholds**

21 **NEPA Effects:** Construction of Alternative 6C would occur in the SMAQMD, YSAQMD, and BAAQMD.
 22 No construction emissions would be generated in the SJVAPCD. Consequently, Alternative 1C would
 23 not expose receptors to increased health risks from localized particulate matter since there would
 24 be no emissions. There would be no adverse effect.

25 **CEQA Conclusion:** Construction of Alternative 6C would occur in the SMAQMD, YSAQMD, and
 26 BAAQMD. No construction emissions would be generated in the SJVAPCD. Consequently, Alternative
 27 1C would not expose receptors to increased health risks from localized particulate matter since
 28 there would be no emissions. This impact would be less than significant. No mitigation is required.

29 **Impact AQ-13: Exposure of Sensitive Receptors to Health Hazards from Localized Carbon**
 30 **Monoxide**

31 **NEPA Effects:** Construction activity required for Alternative 6C would be similar to activity required
 32 for Alternative 1C. Accordingly, the potential for Alternative 6C to result in CO hot-spots during
 33 construction would be the same as Alternative 1C. Given that construction activities typically do not
 34 result in CO hot-spots, onsite concentrations must comply with OSHA standards, and CO levels
 35 dissipate as a function of distance, equipment-generated CO emissions (see Table 22-48) are not
 36 anticipated to result in adverse health hazards to sensitive receptors. Refer to Impact AQ-13 under
 37 Alternative 1C.

38 Traffic associated with construction may contribute to increase roadway congestion, which could
 39 lead to conditions conducive to CO hot-spot formation. As shown in Table 19-25, the highest peak
 40 hour traffic volumes under BPBGPP—11,863 vehicles per hour—would occur on westbound
 41 Interstate 80 between Suisun Valley Road and State Route 12. This is about half of the congested

1 traffic volume modeled by BAAQMD (24,000 vehicles per hour) that would be needed to contribute
 2 to a localized CO hot-spot, and less than half of the traffic volume modeled by SMAQMD (31,600
 3 vehicles per hour). Accordingly, construction traffic is not anticipated to result in adverse health
 4 hazards to sensitive receptors.

5 **CEQA Conclusion:** Continuous engine exhaust may elevate localized CO concentrations. Receptors
 6 exposed to these CO “hot-spots” may have a greater likelihood of developing adverse health effects.
 7 Construction sites are less likely to result in localized CO hot-spots due to the nature of construction
 8 activities (Sacramento Metropolitan Air Quality Management District 2014), which normally utilize
 9 diesel-powered equipment for intermittent or short durations. Moreover, construction sites must
 10 comply with the OSHA CO exposure standards for onsite workers. Accordingly, given that
 11 construction activities typically do not result in CO hot-spots, onsite concentrations must comply
 12 with OSHA standards, and CO levels dissipate as a function of distance, equipment-generated CO
 13 emissions are not anticipated to result in significant health hazards to sensitive receptors. Similarly,
 14 peak-hour construction traffic on local roadways would not exceed BAAQMD’s or SMAQMD’s
 15 conservative screening criteria for the formation potential CO hot-spots. This impact would be less
 16 than significant. No mitigation is required.

17 **Impact AQ-14: Exposure of Sensitive Receptors to Health Hazards from Diesel Particulate**
 18 **Matter in Excess of SMAQMD’s Chronic Non-Cancer and Cancer Risk Thresholds**

19 **NEPA Effects:** Construction activity required for Alternative 6C was assumed to equal activity
 20 required for Alternative 1C. Therefore, the health hazards generated by Alternative 1C would be
 21 representative of emissions generated by 6C. As shown in Table 22-53, Alternative 6C would not
 22 exceed the SMAQMD’s chronic non-cancer or cancer thresholds and, thus, would not expose
 23 sensitive receptors to substantial pollutant concentrations. Therefore, this alternative’s effect of
 24 exposure of sensitive receptors to DPM emissions and their health hazards during construction
 25 would not be adverse.

26 **CEQA Conclusion:** DPM generated during construction poses inhalation-related chronic non-cancer
 27 hazard and cancer risk if adjacent receptors are exposed to significant concentrations for prolonged
 28 durations. The health hazards resulting from DPM generated by Alternative 6C would not exceed the
 29 SMAQMD’s chronic non-cancer or cancer thresholds, and thus would not expose sensitive receptors
 30 to substantial pollutant concentrations. Therefore, this impact for DPM health hazards would be less
 31 than significant. No mitigation is required.

32 **Impact AQ-15: Exposure of Sensitive Receptors to Health Hazards from Diesel Particulate**
 33 **Matter in Excess of YSAQMD’s Chronic Non-Cancer and Cancer Risk Thresholds**

34 **NEPA Effects:** Construction activity required for Alternative 6C within the YSAQMD was assumed to
 35 equal activity required for Alternative 1C. Emissions and associated health risks from exposure to
 36 localized DPM under Alternative 1C would therefore be representative of emissions and health risks
 37 generated by Alternative 6C. As shown in Table 22-54, Alternative 6C would not exceed the
 38 YSAQMD’s chronic non-cancer or cancer thresholds and, thus, would not expose sensitive receptors
 39 to substantial pollutant concentrations. Therefore, this alternative’s effect of exposure of sensitive
 40 receptors to DPM emissions and their health hazards during construction would not be adverse.

41 **CEQA Conclusion:** DPM generated during construction poses inhalation-related chronic non-cancer
 42 hazard and cancer risk if adjacent receptors are exposed to significant concentrations for prolonged
 43 durations. The health hazards resulting from DPM generated by Alternative 6C would not exceed the

1 YSAQMD's chronic non-cancer or cancer thresholds, and thus would not expose sensitive receptors
 2 to substantial pollutant concentrations. Therefore, this impact for DPM health hazards would be less
 3 than significant. No mitigation is required.

4 **Impact AQ-16: Exposure of Sensitive Receptors to Health Hazards from Diesel Particulate**
 5 **Matter in Excess of BAAQMD's Chronic Non-Cancer and Cancer Risk Thresholds**

6 **NEPA Effects:** Construction activity required for Alternative 6C within the BAAQMD was assumed to
 7 equal activity required for Alternative 1C. Emissions and associated health risks from exposure to
 8 localized DPM under Alternative 1C would therefore be representative of emissions and health risks
 9 generated by Alternative 6C. As shown in Table 22-55, chronic risk would be below the BAAQMD's
 10 significance thresholds. However, cancer risk would exceed BAAQMD's cancer significance
 11 threshold, even with implementation of environmental commitments (see Appendix 3B,
 12 *Environmental Commitments*). Therefore, this alternative's effect of exposure of sensitive receptors
 13 to DPM-related health hazards during construction would be adverse.

14 Mitigation Measure AQ-16 would be available to reduce exposure to substantial cancer risk by
 15 relocating affected receptors. Although Mitigation Measure AQ-16 would reduce the severity of this
 16 effect, the BDCP proponents are not solely responsible for implementation of the measure. If a
 17 landowner chooses not to accept DWR's offer of relocation assistance, an adverse effect in the form
 18 excess cancer risk above air district thresholds would occur. Therefore, this effect would be adverse.
 19 If, however, all landowners accept DWR's offer of relocation assistance, effects would not be
 20 adverse.

21 **CEQA Conclusion:** DPM generated during construction poses inhalation-related chronic non-cancer
 22 hazard and cancer risk if adjacent receptors are exposed to significant concentrations for prolonged
 23 durations. DPM generated during Alternative 6C construction would not exceed the BAAQMD's
 24 chronic non-cancer hazard threshold; however, it would exceed the BAAQMD's cancer thresholds.
 25 Therefore, this impact for DPM emissions would be significant.

26 Mitigation Measure AQ-16 would be available to reduce exposure to substantial cancer risk by
 27 relocating affected receptors. Although Mitigation Measure AQ-16 would reduce the severity of this
 28 effect, the BDCP proponents are not solely responsible for implementation of the measure. If a
 29 landowner chooses not to accept DWR's offer of relocation assistance, a significant impact in the
 30 form excess cancer risk above air district thresholds would occur. Therefore, this effect would be
 31 significant and unavoidable. If, however, all landowners accept DWR's offer of relocation assistance,
 32 the impact would be less than significant.

33 **Mitigation Measure AQ-16: Relocate Sensitive Receptors to Avoid Excess Cancer Risk**

34 Please see Mitigation Measure AQ-16 under Impact AQ-16 in the discussion of Alternative 1A.

35 **Impact AQ-17: Exposure of Sensitive Receptors to Health Hazards from Diesel Particulate**
 36 **Matter in Excess of SJVAPCD's Chronic Non-Cancer and Cancer Risk Thresholds**

37 **NEPA Effects:** Construction of Alternative 6C would occur in the SMAQMD, YSAQMD, and BAAQMD.
 38 No construction emissions would be generated in the SJVAPCD. Consequently, Alternative 1C would
 39 not expose receptors to increased health risks from DPM since there would be no emissions. There
 40 would be no adverse effect.

1 **CEQA Conclusion:** Construction of Alternative 6C would occur in the SMAQMD, YSAQMD, and
 2 BAAQMD. No construction emissions would be generated in the SJVAPCD. Consequently, Alternative
 3 1C would not expose receptors to increased health risks from DPM since there would be no
 4 emissions. This impact would be less than significant. No mitigation is required.

5 **Impact AQ-18: Exposure of Sensitive Receptors to *Coccidioides immitis* (Valley Fever)**

6 **NEPA Effects:** As discussed under Alternative 1A, earthmoving activities during construction could
 7 release *C. immitis* spores if filaments are present and other soil chemistry and climatic conditions
 8 are conducive to spore development. Receptors adjacent to the construction area may therefore be
 9 exposed to increase risk of inhaling *C. immitis* spores and subsequent development of Valley Fever.
 10 Dust-control measures are the primary defense against infection (United States Geological Survey
 11 2000). Implementation of advanced air-district recommended fugitive dust controls outlined in
 12 Appendix 3B, *Environmental Commitments*, would avoid dusty conditions and reduce the risk of
 13 contracting Valley Fever through routine watering and other controls. Therefore, this alternative's
 14 effect of exposure of sensitive receptors to increased Valley Fever risk during construction would
 15 not be adverse.

16 **CEQA Conclusion:** Construction of the water conveyance facility would involve earthmoving
 17 activities that could release *C. immitis* spores if filaments are present and other soil chemistry and
 18 climatic conditions are conducive to spore development. Receptors adjacent to the construction area
 19 may therefore be exposed to increase risk of inhaling *C. immitis* spores and subsequent development
 20 of Valley Fever. Implementation of air-district recommended fugitive dust controls outlined in
 21 Appendix 3B, *Environmental Commitments*, would avoid dusty conditions and reduce the risk of
 22 contracting Valley Fever through routine watering and other controls. Therefore, this impact would
 23 be less than significant. No mitigation is required.

24 **Impact AQ-19: Creation of Potential Odors Affecting a Substantial Number of People during**
 25 **Construction or Operation of the Proposed Water Conveyance Facility**

26 **NEPA Effects:** As discussed under Alternative 1A, odors from construction activities would be
 27 localized and generally confined to the immediate area surrounding the construction site. Moreover,
 28 odors would be temporary and localized, and they would cease once construction activities have
 29 been completed. Thus, it is not anticipated that construction of CM1 would create objectionable
 30 odors from construction equipment or asphalt paving.

31 Construction of the water conveyance facility would require removal of subsurface material during
 32 tunnel excavation and sediment removal. As discussed under Alternative 1A, geotechnical tests
 33 indicate that VOC levels in Plan Area soils are below the method detection limits, indicating that
 34 organic decay of exposed RTM and sediment will be relatively low (URS 2014). Moreover, drying
 35 and stockpiling of the removed RTM and sediment will occur under aerobic conditions, which will
 36 further limit any potential decomposition and associated malodorous products. Accordingly, it is not
 37 anticipated that tunnel and sediment excavation would create objectionable odors.

38 Typical facilities known to produce odors include landfills, wastewater treatment plants, food
 39 processing facilities, and certain agricultural activities. Alternative 6C would not result in the
 40 addition of facilities associated with odors, and as such, long-term operation of the water
 41 conveyance facility would not result in objectionable odors.

1 **CEQA Conclusion:** Alternative 6C would not result in the addition of major odor producing facilities.
 2 Diesel emissions during construction could generate temporary odors, but these would quickly
 3 dissipate and cease once construction is completed. Likewise, potential odors generated during
 4 asphalt paving would be addressed through mandatory compliance with air district rules and
 5 regulations. While tunnel excavation would unearth substantial quantities of RTM, geotechnical
 6 tests indicate that soils in the Plan Area have relatively low organic constituents. Moreover, drying
 7 and stockpiling of the removed RTM will occur under aerobic conditions, which will further limit
 8 any potential decomposition and associated malodorous products. Accordingly, the impact of
 9 exposure of sensitive receptors to potential odors during construction would be less than
 10 significant. No mitigation is required.

11 **Impact AQ-20: Generation of Criteria Pollutants in the Excess of Federal *De Minimis***
 12 **Thresholds from Construction and Operation and Maintenance of the Proposed Water**
 13 **Conveyance Facility**

14 **NEPA Effects:** As discussed above, emissions generated by Alternative 1C within the SFNA and
 15 SFBAAB would be representative of emissions generated by Alternative 6C (refer to Table 22-56).
 16 No emissions would be generated within the SJVAB and as such, the project would conform to the
 17 appropriate SJVAB SIPs.

18 **Sacramento Federal Nonattainment Area**

19 As shown in Table 22-56, implementation of Alternative 1C (and thus Alternative 6C) would exceed
 20 the following SFNA federal *de minimis* thresholds:

- 21 • ROG: 2019–2025
- 22 • NO_x: 2018–2028

23 ROG and NO_x are precursors to ozone and NO_x is a precursor to PM, for which the SFNA is in
 24 nonattainment for the NAAQS. Since project emissions exceed the federal *de minimis* thresholds for
 25 ROG and NO_x, a general conformity determination must be made to demonstrate that total direct
 26 and indirect emissions of ROG and NO_x would conform to the appropriate SFNA SIP for each year of
 27 construction in which the *de minimis* thresholds are exceeded.

28 NO_x is also a precursor to PM and can contribute to PM formation. As discussed above, Sacramento
 29 County is currently designated maintenance for the PM10 NAAQS and portions of the SVAB are
 30 designated nonattainment for the PM2.5 NAAQS. NO_x emissions in excess of 100 tons per year in
 31 Sacramento County trigger a secondary PM10 precursor threshold, whereas NO_x emissions in excess
 32 of 100 tons per year in the SVAB trigger a secondary PM2.5 precursor threshold. Since NO_x
 33 emissions can contribute to PM formation, NO_x emissions in excess of these secondary precursor
 34 thresholds could conflict with the applicable PM10 and PM2.5 SIPs. Accordingly, NO_x offsets pursued
 35 for the purposes of general conformity for those years in which NO_x emissions exceed 100 tons must
 36 occur within the federally designated PM2.5 nonattainment and PM10 maintenance areas of the
 37 SVAB.

38 As shown in Table 22-48, NO_x emissions generated by construction activities in SMAQMD
 39 (Sacramento County) would not exceed 100 tons per year. Accordingly, the project does not trigger
 40 the secondary PM10 precursor threshold. As shown in Table 22-56, NO_x emissions in 2019 through
 41 2027 would exceed 100 tons year in the SFNA. The project therefore triggers the secondary PM2.5
 42 precursor threshold, requiring all NO_x offsets for 2019 through 2027 to occur within the federally

1 designated PM_{2.5} nonattainment area within the SFNA. The nonattainment boundary for PM_{2.5}
 2 includes all of Sacramento County and portions of Yolo, El Dorado, Solano, and Placer counties.

3 The federal lead agencies (Reclamation, USFWS, and NMFS) demonstrate that project emissions
 4 would not result in a net increase in regional NO_x emissions, as construction-related NO_x would be
 5 fully offset to zero through implementation of Mitigation Measures AQ-1a and 1b, which require
 6 additional onsite mitigation and/or offsets. Mitigation Measures AQ-1a and 1b will ensure the
 7 requirements of the mitigation and offset program are implemented and conformity requirements
 8 for NO_x are met.

9 **Mitigation Measure AQ-1a: Mitigate and Offset Construction-Generated Criteria Pollutant**
 10 **Emissions within the SFNA to Net Zero (0) for Emissions in Excess of General Conformity**
 11 ***De Minimis* Thresholds (Where Applicable) and to Quantities below Applicable CEQA**
 12 **Thresholds for Other Pollutants**

13 Please see Mitigation Measure AQ-1a under Impact AQ-1 in the discussion of Alternative 1A.

14 **Mitigation Measure AQ-1b: Develop an Alternative or Complementary Offsite Mitigation**
 15 **Program to Mitigate and Offset Construction-Generated Criteria Pollutant Emissions**
 16 **within the SFNA to Net Zero (0) for Emissions in Excess of General Conformity *De Minimis***
 17 **Thresholds (Where Applicable) and to Quantities below Applicable CEQA Thresholds for**
 18 **Other Pollutants**

19 Please see Mitigation Measure AQ-1b under Impact AQ-1 in the discussion of Alternative 1A.

20 ***San Francisco Bay Area Air Basin***

21 As shown in Table 22-56, implementation of Alternative 1C (and thus Alternative 6C) would exceed
 22 the following SFBAAB federal *de minimis* thresholds:

- 23 ● NO_x: 2019–2024

24 NO_x is a precursor to ozone, for which the SJVAB is in nonattainment for the NAAQS. Since project
 25 emissions exceed the federal *de minimis* threshold for NO_x, a general conformity determination must
 26 be made to demonstrate that total direct and indirect emissions of NO_x would conform to the
 27 appropriate SJVAB SIP for each year of construction in which the *de minimis* thresholds are
 28 exceeded.

29 NO_x is also a precursor to PM and can contribute to PM formation. As discussed above, the SFBAAB
 30 is currently designated nonattainment for the PM_{2.5} NAAQS. NO_x emissions in excess of 100 tons
 31 per year trigger a secondary PM precursor threshold, and could conflict with the applicable PM_{2.5}
 32 SIP. Accordingly, NO_x offsets pursued for the purposes of general conformity for those years in
 33 which NO_x emissions exceed 100 tons must occur within the federally designated PM_{2.5}
 34 nonattainment area of the SFBAAB, which is consistent with the larger nonattainment boundary for
 35 ozone.

36 Although Mitigation Measures AQ-3a and AQ-3b would reduce NO_x, given the magnitude of
 37 emissions; neither measure could feasibly reduce emissions to net zero. This impact would be
 38 adverse. In the event that Alternative 6C is selected as the APA, Reclamation, USFWS, and NMFS
 39 would need to demonstrate that conformity is met for NO_x through a local air quality modeling
 40 analysis (i.e., dispersion modeling) or other acceptable methods to ensure project emissions do not

1 cause or contribute to any new exceedances of the NAAQS or increase the frequency or severity of
2 any existing exceedances.

3 **Mitigation Measure AQ-3a: Mitigate and Offset Construction-Generated Criteria Pollutant**
4 **Emissions within the BAAQMD/SFBAAB to Net Zero (0) for Emissions in Excess of General**
5 **Conformity *De Minimis* Thresholds (Where Applicable) and to Quantities below**
6 **Applicable BAAQMD CEQA Thresholds for Other Pollutants**

7 Please see Mitigation Measure AQ-3a under Impact AQ-3 in the discussion of Alternative 1A.

8 **Mitigation Measure AQ-3b: Develop an Alternative or Complementary Offsite Mitigation**
9 **Program to Mitigate and Offset Construction-Generated Criteria Pollutant Emissions**
10 **within the BAAQMD/SFBAAB to Net Zero (0) for Emissions in Excess of General**
11 **Conformity *De Minimis* Thresholds (Where Applicable) and to Quantities below**
12 **Applicable BAAQMD CEQA Thresholds for Other Pollutants**

13 Please see Mitigation Measure AQ-3b under Impact AQ-3 in the discussion of Alternative 1A.

14 **CEQA Conclusion:** SFNA and SFBAAB are classified as nonattainment areas with regard to the ozone
15 NAAQS. The impact of increases in criteria pollutant emissions above the air basin *de minimis*
16 thresholds could conflict with or obstruct implementation of the applicable air quality plans. Since
17 construction emissions in the SFNA and SFBAAB would exceed the *de minimis* thresholds for ROG
18 (SFNA only) and NO_x, this impact would be significant.

19 Mitigation Measures AQ-1a and AQ-1b would ensure project emissions would not result in an
20 increase in regional ROG or NO_x emissions in the SFNA. These measures would therefore ensure
21 total direct and indirect ROG and NO_x emissions generated by the project in the SFNA would
22 conform to the appropriate air basin SIPs by offsetting the action's emissions in the same or nearby
23 area to net zero.

24 Although Mitigation Measures AQ-3a and AQ-3b would reduce NO_x in the SFBAAB, given the
25 magnitude of emissions; neither measure could feasibly reduce emissions to net zero. This impact
26 would be significant and unavoidable.

27 No emissions would be generated within the SJVAB and as such, the project would conform to the
28 appropriate SJVAB SIPs.

29 **Impact AQ-21: Generation of Cumulative Greenhouse Gas Emissions during Construction of**
30 **the Proposed Water Conveyance Facility**

31 **NEPA Effects:** Construction activity required for Alternative 6C was assumed to equal activity
32 required for Alternative 1C. Emissions generated by Alternative 1C would therefore be
33 representative of emissions generated by Alternative 6C (see Table 22-57). As shown in Table 22-
34 57, construction of Alternative 6C would generate a total of 2.5 million metric tons of GHG
35 emissions. As discussed in section 22.3.2, *Determination of Effects*, any increase in emissions above
36 net zero associated with construction of the BDCP water conveyance features would be adverse.
37 Accordingly, this effect would be adverse. Mitigation Measure AQ-21, which would develop a GHG
38 Mitigation Program to reduce construction-related GHG emissions to net zero, is available address
39 this effect.

CEQA Conclusion: Construction of Alternative 6C would generate a total of 2.5 million metric tons of GHG emissions. This is equivalent to adding 518,000 typical passenger vehicles to the road during construction (U.S. Environmental Protection Agency 2014e). As discussed in section 22.3.2, *Determination of Effects*, any increase in emissions above net zero associated with construction of the BDCP water conveyance features would be significant. Mitigation Measure AQ-21 would develop a GHG Mitigation Program to reduce construction-related GHG emissions to net zero. Accordingly, this impact would be less-than-significant with implementation of Mitigation Measure AQ-21.

Mitigation Measure AQ-21: Develop and Implement a GHG Mitigation Program to Reduce Construction Related GHG Emissions to Net Zero (0)

Please see Mitigation Measure AQ-21 under Impact AQ-21 in the discussion of Alternative 1A.

Impact AQ-22: Generation of Cumulative Greenhouse Gas Emissions from Operation and Maintenance of the Proposed Water Conveyance Facility and Increased Pumping

NEPA Effects: Operation of Alternative 6C would generate direct and indirect GHG emissions. Sources of direct emissions include heavy-duty equipment, on road crew trucks, and employee vehicle traffic. Indirect emissions would be generated predominantly by electricity consumption required for pumping as well as, maintenance, lighting, and other activities.

Table 22-129 summarizes long-term operational GHG emissions associated with operations, maintenance, and increased SWP pumping. Emissions were quantified for both ELT and LLT conditions, although activities would take place annually until project decommissioning. Emissions include state mandates to reduce GHG emissions (described in Impact AQ-21) are presented (there are no BDCP specific operational environmental commitments). Total CO_{2e} emissions are compared to both the No Action Alternative (NEPA point of comparison) and Existing Conditions (CEQA baseline). As discussed in Section 22.3.1.2, equipment emissions are assumed to be zero under both the No Action Alternative (NEPA point of comparison) and Existing Conditions (CEQA baseline). The equipment emissions presented in Table 22-129 are therefore representative of project impacts for both the NEPA and CEQA analysis.

Table 22-129. GHG Emissions from Operation, Maintenance, and Increased SWP Pumping, Alternative 6C (metric tons/year)

Condition	Equipment CO _{2e}	Electricity CO _{2e}		Total CO _{2e}	
		NEPA Point of Comparison	CEQA Baseline	NEPA Point of Comparison	CEQA Baseline
ELT	526	-	-100,071	-	-99,545
LLT	513	-13,929	-40,195	-13,416	-39,682

Note: The *NEPA point of comparison* compares total CO_{2e} emissions after implementation of Alternative 6C to the No Action Alternative, whereas the *CEQA baseline* compares total CO_{2e} emissions to Existing Conditions. Negative values represent a net GHG reduction.

Table 22-59 summarizes equipment CO_{2e} emissions that would be generated in the BAAQMD, SMAQMD, and SJVAPCD (no emissions would be generated in the YSAQMD). The table does not include emissions from concrete absorption or SWP pumping as these emissions would be generated by power plants located throughout the state (see discussion preceding this impact

1 analysis). GHG emissions presented in Table 22-59 are therefore provided for information purposes
2 only.

3 **SWP Operational and Maintenance GHG Emissions Analysis**

4 Alternative 6C would not add any additional net electricity demand to operation of the SWP and
5 would in fact result in a net reduction in electricity demand (see Table 22-129). Therefore, there will
6 be no impact on SWP operational emissions.

7 A small amount of additional GHG emissions from equipment would be emitted as a result of the
8 maintenance of new facilities associated with Alternative 6C (Table 22-129). Emissions from
9 additional maintenance activities would become part of the overall DWR maintenance program for
10 the SWP and would be managed under DWR's CAP.

11 The CAP sets forth DWR's plan to manage its activities and operations to achieve its GHG emissions
12 reduction goals. The CAP commits DWR to monitoring its emissions each year and evaluating its
13 emissions every five years to determine whether it is on a trajectory to achieve its GHG emissions
14 reduction goals. If it appears that DWR will not meet the GHG emission reduction goals established
15 in the plan, DWR may make adjustments to existing emissions reduction measures, devise new
16 measures to ensure achievement of the goals, or take other action.

17 Consistent with the analysis contained in the CAP and associated Initial Study and Negative
18 Declaration for the CAP, BDCP Alternative 6C would not adversely affect DWR's ability to achieve the
19 GHG emissions reduction goals set forth in the CAP. Further, Alternative 6C would not conflict with
20 any of DWR's specific action GHG emissions reduction measures and implements all applicable
21 project level GHG emissions reduction measures as set forth in the CAP. BDCP Alternative 6C is
22 therefore consistent with the analysis performed in the CAP. There would be no adverse effect.

23 **CEQA Conclusion:** SWP GHG emissions currently are below 1990 levels and achievement of the
24 goals of the CAP means that total DWR GHG emissions will be reduced to 50% of 1990 levels by
25 2020 and to 80% of 1990 levels by 2050. The implementation of BDCP Alternative 6C would not
26 affect DWR's established emissions reduction goals or baseline (1990) emissions and therefore
27 would not result in a change in total DWR emissions that would be considered significant. Prior
28 adoption of the CAP by DWR already provides a commitment on the part of DWR to make all
29 necessary modifications to DWR's REPP (as described above) or any other GHG emission reduction
30 measure in the CAP that are necessary to achieve DWR's GHG emissions reduction goals. Therefore
31 no amendment to the approved CAP is necessary to ensure the occurrence of the additional GHG
32 emissions reduction activities needed to account for BDCP-related operational or maintenance
33 emissions. The effect of BDCP Alternative 6C with respect to GHG emissions is less than cumulatively
34 considerable and therefore less than significant. No mitigation is required.

35 **Impact AQ-23: Generation of Cumulative Greenhouse Gas Emissions from Increased CVP** 36 **Pumping as a Result of Implementation of CM1**

37 **NEPA Effects:** As previously discussed, DWR's CAP cannot be used to evaluate environmental
38 impacts associated with increased CVP pumping, as emissions associated with CVP are not under
39 DWR's control and are not included in the CAP. Accordingly, GHG emissions resulting from increased
40 CVP energy use are evaluated separately from GHG emissions generated as a result of SWP energy
41 use.

1 Under Alternative 6C, operation of the CVP yields the generation of clean, GHG emissions-free,
 2 hydroelectric energy. This electricity is sold into the California electricity market or directly to
 3 energy users. Analysis of the existing and future no action condition indicates that the CVP generates
 4 and will continue to generate all of the electricity needed to operate the CVP system and
 5 approximately 3,500 GWh of excess hydroelectric energy that would be sold to energy users
 6 throughout California.

7 Implementation of Alternative 6C is neither expected to require additional electricity over the No
 8 Action Alternative nor reduce the amount of excess CVP generation available for sale from the CVP
 9 to electricity users. The CVP is operated using energy generated at CVP hydroelectric facilities and
 10 therefore results in no GHG emissions. Rather, implementation of Alternative 6C would reduce GHG
 11 emissions by 24,398 to 31,398 metric tons of CO₂e, relative to the No Action Alternative (depending
 12 on whether the RPS is assumed in the emissions calculations). Accordingly, there would be no
 13 adverse effect.

14 **CEQA Conclusion:** Implementation of Alternative 6C is neither expected to require additional
 15 electricity over Existing Conditions nor reduce the amount of excess CVP generation available for
 16 sale from the CVP to electricity users. All power supplied to CVP facilities would continue to be
 17 supplied by GHG emissions-free hydroelectricity and there would be no increase in GHG emissions
 18 over Existing Conditions as a result of CVP operations. The impact would be less than significant and
 19 no mitigation is required.

20 **Impact AQ-24: Generation of Regional Criteria Pollutants from Implementation of CM2–CM11**

21 **NEPA Effects:** Table 22-29 summarizes potential construction and operational emissions that may
 22 be generated by implementation of CM2–CM11. See the discussion of Impact AQ-24 under
 23 Alternative 1A.

24 Criteria pollutants from restoration and enhancement actions could exceed applicable general
 25 conformity *de minimis* levels and applicable local thresholds. The effect would vary according to the
 26 equipment used in construction of a specific conservation measure, the location, the timing of the
 27 actions called for in the conservation measure, and the air quality conditions at the time of
 28 implementation; these effects would be evaluated and identified in the subsequent project-level
 29 environmental analysis conducted for the CM2–CM11 restoration and enhancement actions. The
 30 effect of increases in emissions during implementation of CM2–CM11 in excess of applicable general
 31 conformity *de minimis* levels and air district regional thresholds (Table 22-8) could violate air basin
 32 SIPs and worsen existing air quality conditions. Mitigation Measure AQ-24 would be available to
 33 reduce this effect, but emissions would still be adverse.

34 **CEQA Conclusion:** Construction and operational emissions associated with the restoration and
 35 enhancement actions would result in a significant impact if the incremental difference, or increase,
 36 relative to Existing Conditions exceeds the applicable local air district thresholds shown in Table 22-
 37 8; these effects are expected to be further evaluated and identified in the subsequent project-level
 38 environmental analysis conducted for the CM2–CM11 restoration and enhancement actions.
 39 Mitigation Measure AQ-24 would be available to reduce this effect, but may not be sufficient to
 40 reduce emissions below applicable air quality management district thresholds (see Table 22-8).
 41 Consequently, this impact would be significant and unavoidable.

1 **Mitigation Measure AQ-24: Develop an Air Quality Mitigation Plan (AQMP) to Ensure Air**
 2 **District Regulations and Recommended Mitigation are Incorporated into Future**
 3 **Conservation Measures and Associated Project Activities**

4 Please see Mitigation Measure AQ-24 under Impact AQ-18 in the discussion of Alternative 1A.

5 **Impact AQ-25: Exposure of Sensitive Receptors to Health Hazards from Localized Particulate**
 6 **Matter, Carbon Monoxide, and Diesel Particulate Matter from Implementation of CM2–CM11**

7 **NEPA Effects:** The potential for Alternative 6C to expose sensitive receptors increased health
 8 hazards from localized PM, CO, and DPM would be similar to Alternative 1A. Activities shown in
 9 Table 22-29 with the greatest potential to have short or long-term air quality impacts are also
 10 anticipated to have the greatest potential to expose receptors to substantial pollutant
 11 concentrations. The effect would vary according to the equipment used, the location and timing of
 12 the actions called for in the conservation measure, the meteorological and air quality conditions at
 13 the time of implementation, and the location of receptors relative to the emission source. Potential
 14 health effects would be evaluated and identified in the subsequent project-level environmental
 15 analysis conducted for the CM2–CM11 restoration and enhancement actions.

16 The effect of increases in PM, CO, or DPM (cancer and non-cancer-risk) in excess of applicable air
 17 district thresholds (Table 22-8) at receptor locations could result in adverse health impacts.
 18 Mitigation Measures AQ-24 and AQ-25 would be available to reduce this effect.

19 **CEQA Conclusion:** Construction and operational emissions associated with the restoration and
 20 enhancement actions under Alternative 6C would result in a significant impact if PM, CO, or DPM
 21 (cancer and non-cancer-risk) concentrations at receptor locations exceed the applicable local air
 22 district thresholds shown in Table 22-8; these effects are expected to be further evaluated and
 23 identified in the subsequent project-level environmental analysis conducted for the CM2–CM11
 24 restoration and enhancement actions. Mitigation Measures AQ-24 and AQ-25 would ensure localized
 25 concentrations at receptor locations would be below applicable air quality management district
 26 thresholds (see Table 22-8). Consequently, this impact would be less than significant.

27 **Mitigation Measure AQ-24: Develop an Air Quality Mitigation Plan (AQMP) to Ensure Air**
 28 **District Regulations and Recommended Mitigation are Incorporated into Future**
 29 **Conservation Measures and Associated Project Activities**

30 Please see Mitigation Measure AQ-24 under Impact AQ-24 in the discussion of Alternative 1A.

31 **Mitigation Measure AQ-25: Prepare a Project-Level Health Risk Assessment to Reduce**
 32 **Potential Health Risks from Exposure to Localized DPM and PM Concentrations**

33 Please see Mitigation Measure AQ-25 under Impact AQ-25 in the discussion of Alternative 1A.

34 **Impact AQ-26: Creation of Potential Odors Affecting a Substantial Number of People from**
 35 **Implementation of CM2–CM11**

36 **NEPA Effects:** The potential for Alternative 6C to expose sensitive receptors increased odors would
 37 be similar to Alternative 1A. Accordingly, construction activities associated with CM2–CM11 are not
 38 anticipated to result in nuisance odors. Similarly, while restored land uses associated with the
 39 program have the potential to generate odors from natural processes, the emissions would be
 40 similar in origin and magnitude to the existing land use types in the restored area (e.g., managed

1 wetlands). Moreover, specific odor effects would be evaluated and identified in the subsequent
 2 project-level environmental analysis conducted for the CM2–CM11 restoration and enhancement
 3 actions. Accordingly, odor-related effects associated with CM2–CM11 would not be adverse.

4 **CEQA Conclusion:** Alternative 6C would not result in the addition of major odor producing facilities.
 5 Diesel emissions during construction could generate temporary odors, but these would quickly
 6 dissipate and cease once construction is completed. Increases in wetland, tidal, and upland habitats
 7 may increase the potential for odors from natural processes. However, the origin and magnitude of
 8 odors would be similar to the existing land use types in the restored area (e.g., managed wetlands).
 9 Moreover, specific odor impacts would be evaluated and identified in the subsequent project-level
 10 environmental analysis conducted for the CM2–CM11 restoration and enhancement actions.
 11 Accordingly, the impact of exposure of sensitive receptors to potential odors would be less than
 12 significant. No mitigation is required.

13 **Impact AQ-27: Generation of Cumulative Greenhouse Gas Emissions from Implementation of** 14 **CM2–CM11**

15 **NEPA Effects:** CM2–CM11 implemented under Alternative 6C would result in local GHG emissions
 16 from construction equipment and vehicle exhaust. Restoration activities with the greatest potential
 17 for emissions include those that break ground and require use of earthmoving equipment. The type
 18 of restoration action and related construction equipment use are shown in Table 22-29.
 19 Implementing CM2–CM11 would also affect long-term sequestration rates through land use changes,
 20 such as conversion of agricultural land to wetlands, inundation of peat soils, drainage of peat soils,
 21 and removal or planting of carbon-sequestering plants.

22 Without additional information on site-specific characteristics associated with each of the
 23 restoration components, a complete assessment of GHG flux from CM2–CM11 is currently not
 24 possible. The effect of carbon sequestration and CH₄ generation would vary by land use type, season,
 25 and chemical and biological characteristics; these effects would be evaluated and identified in the
 26 subsequent project-level environmental analysis conducted for the CM2–CM11 restoration and
 27 enhancement actions. Mitigation Measures AQ-24 and AQ-27 would be available to reduce this
 28 effect. However, due to the potential for increases in GHG emissions from construction and land use
 29 change, this effect would be adverse.

30 **CEQA Conclusion:** The restoration and enhancement actions under Alternative 6C could result in a
 31 significant impact if activities are inconsistent with applicable GHG reduction plans, do not
 32 contribute to a lower carbon future, or generate excessive emissions, relative to other projects
 33 throughout the state. These effects are expected to be further evaluated and identified in the
 34 subsequent project-level environmental analysis conducted for the CM2–CM11 restoration and
 35 enhancement actions. Mitigation Measures AQ-24 and AQ-27 would be available to reduce this
 36 impact, but may not be sufficient to reduce to a less-than-significant level. Consequently, this impact
 37 would be significant and unavoidable.

38 **Mitigation Measure AQ-24: Develop an Air Quality Mitigation Plan (AQMP) to Ensure Air** 39 **District Regulations and Recommended Mitigation are Incorporated into Future** 40 **Conservation Measures and Associated Project Activities**

41 Please see Mitigation Measure AQ-24 under Impact AQ-24 in the discussion of Alternative 1A.

1 **Mitigation Measure AQ-27: Prepare a Land Use Sequestration Analysis to Quantify and**
2 **Mitigate (as Needed) GHG Flux Associated with Conservation Measures and Associated**
3 **Project Activities**

4 Please see Mitigation Measure AQ-27 under Impact AQ-27 in the discussion of Alternative 1A.

5 **22.3.3.14 Alternative 7—Dual Conveyance with Tunnel, Intakes 2, 3, and 5,**
6 **and Enhanced Aquatic Conservation (9,000 cfs; Operational**
7 **Scenario E)**

8 For the purposes of this analysis, it was assumed that Intakes 2, 3, and 5 would be constructed under
9 Alternative 7. Under this alternative, an intermediate forebay would also be constructed, and the
10 conveyance facility would be a buried pipeline and tunnels (Figures 3-2 and 3-11 in Chapter 3,
11 *Description of Alternatives*).

12 Construction and operation of Alternative 7 would require the use of electricity, which would be
13 supplied by the California electrical grid. Power plants located throughout the state supply the grid
14 with power, which will be distributed to the Study area to meet project demand. Power supplied by
15 statewide power plants will generate criteria pollutants. Because these power plants are located
16 throughout the state, criteria pollutant emissions associated with Alternative 7 electricity demand
17 cannot be ascribed to a specific air basin or air district within the Study area. Criteria pollutant
18 emissions from electricity consumption, which are summarized in Table 22-130, are therefore
19 provided for informational purposes only and are not included in the impact conclusion.

1 **Table 22-130. Criteria Pollutant Emissions from Electricity Consumption: Construction and Net Project**
 2 **Operations, Alternative 7 (tons/year)^{a,b}**

Year	Analysis	ROG	CO	NO _x	PM10	PM2.5 ^c	SO ₂
2016	-	0	0	0	0	0	0
2017	-	0	0	0	0	0	0
2018	-	<1	<1	<1	<1	<1	<1
2019	-	<1	2	<1	<1	<1	1
2020	-	<1	12	1	1	1	5
2021	-	<1	32	2	3	3	13
2022	-	<1	45	3	4	4	19
2023	-	<1	40	3	3	3	17
2024	-	<1	42	3	4	4	18
2025	-	<1	28	2	2	2	12
2026	-	<1	10	1	1	1	4
2027	-	<1	2	<1	<1	<1	1
2028	-	<1	<1	<1	<1	<1	<1
2029	-	<1	<1	<1	<1	<1	<1
ELT	CEQA	-2	-17	-240	-20	-20	-101
LLT	NEPA	-1	-10	-132	-11	-11	-56
LLT	CEQA	-2	-22	-297	-25	-25	-125

NEPA = Compares criteria pollutant emissions after implementation of Alternative 7 to the No Action Alternative.

CEQA = Compares criteria pollutant emissions after implementation of Alternative 7 to Existing Conditions.

^a Emissions assume implementation of RPS (see Appendix 22A, *Air Quality Analysis Methodology*). Power plants that generate electricity for the proposed project would be subject to local air district permitting requirements, including standards to implement BACT to reduce criteria pollutant emissions.

^b Because GHG emissions are cumulative (see Section 22.3.2.1) and not evaluated at the local air basin or air district level, they are discussed in Impacts AQ-21 and AQ-22. The GHG analysis for SWP power utilizes actual and forecasted GHG emissions rates for the SWP system, which differs slightly from the above analysis. Statewide grid average emission factors were utilized for the above analysis as criteria pollutant emission factors for SWP were unavailable. Please also note that the above analysis does not account for additional renewable energy that will be procured through modifications to DWR's REPP (see Impact AQ-22). Accordingly, the emissions results presented above represent a conservative assessment of potential criteria pollutant emissions.

^c Emission factors for PM2.5 are currently unavailable. Consequently, PM2.5 emissions were assumed to equal PM10 emissions. Because PM2.5 represents a fraction of PM10, this approach represents a conservative assessment of PM2.5 emissions from electricity consumption.

3

4 Construction activities would generate emissions of ozone precursors (ROG and NO_x), CO, PM10,
 5 PM2.5, and SO₂. Table 22-131 summarizes criteria pollutant emissions that would be generated in
 6 the BAAQMD, SMAQMD, SJVAPCD, and YSAQMD in pounds per day and tons per year. Emissions
 7 estimates include implementation of environmental commitments (see Appendix 3B, *Environmental*
 8 *Commitments*). Although emissions are presented in different units (pounds and tons), the amounts
 9 of emissions are identical (i.e., 2,000 pounds is identical to 1 ton). Summarizing emissions in both
 10 pounds per day and tons per year is necessary to evaluate project-level effects against the
 11 appropriate air district thresholds, which are given in both pounds and tons (see Table 22-8).

1 As shown in Appendix 22B, *Air Quality Assumptions*, construction activities during several phases
2 will likely occur concurrently. To ensure a conservative analysis, the maximum daily emissions
3 during these periods of overlap were estimated assuming all equipment would operate at the same
4 time—this gives the maximum total project-related air quality impact during construction.
5 Accordingly, the daily emissions estimates represent a conservative assessment of construction
6 impacts. Exceedances of the air district thresholds are shown in underlined text.
7

1 **Table 22-131. Criteria Pollutant Emissions from Construction of Alternative 7 (pounds/day and tons/year)**

Year	Maximum Daily Emissions (pounds/day)										Annual Emissions (tons/year)									
	Bay Area Air Quality Management District										Bay Area Air Quality Management District									
	ROG	NO _x	CO	PM10			PM2.5			SO ₂	ROG	NO _x	CO	PM10			PM2.5			SO ₂
			Exhaust	Dust	Total	Exhaust	Dust	Total				Exhaust	Dust	Total	Exhaust	Dust	Total			
2016	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
2017	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
2018	7	<u>128</u>	42	<1	88	88	<1	22	23	1	<1	2	1	<1	1	1	<1	<1	<1	
2019	14	<u>224</u>	86	1	139	140	1	35	36	2	2	16	13	<1	3	3	<1	1	<1	
2020	18	<u>275</u>	114	1	163	164	1	41	43	3	3	25	22	<1	5	5	<1	1	<1	
2021	20	<u>301</u>	124	1	178	179	1	45	47	3	4	33	29	<1	6	7	<1	1	<1	
2022	27	<u>391</u>	163	2	235	237	2	60	61	4	5	37	30	<1	9	9	<1	2	<1	
2023	<u>86</u>	<u>799</u>	502	6	401	408	6	85	91	7	8	59	48	1	22	22	1	4	<1	
2024	<u>94</u>	<u>927</u>	540	7	518	525	7	115	122	9	12	84	70	1	27	28	1	5	1	
2025	<u>89</u>	<u>896</u>	503	6	489	495	6	111	117	9	7	51	43	1	18	19	<1	3	<1	
2026	<u>58</u>	<u>663</u>	355	5	426	430	5	98	102	8	5	40	32	<1	17	17	<1	3	<1	
2027	<u>62</u>	<u>624</u>	362	19	391	410	18	89	107	8	3	21	17	<1	14	14	<1	2	<1	
2028	21	<u>331</u>	133	1	302	304	1	69	70	4	<1	2	1	<1	5	5	<1	1	<1	
2029	8	<u>154</u>	49	1	113	113	1	29	30	2	<1	<1	<1	<1	<1	<1	<1	<1	<1	
<i>Thresholds</i>	<i>54</i>	<i>54</i>	<i>-</i>	<i>82</i>	<i>BMPs</i>	<i>-</i>	<i>54</i>	<i>BMPs</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	
Year	Sacramento Metropolitan Air Quality Management District										Sacramento Metropolitan Air Quality Management District									
	ROG	NO _x	CO	PM10			PM2.5			SO ₂	ROG	NO _x	CO	PM10			PM2.5			SO ₂
				Exhaust	Dust	Total	Exhaust	Dust	Total				Exhaust	Dust	Total	Exhaust	Dust	Total		
2016	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
2017	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
2018	74	<u>827</u>	492	14	179	193	13	32	45	3	3	28	19	1	11	11	1	2	<1	
2019	48	<u>563</u>	321	6	274	280	6	49	54	3	4	25	31	1	23	23	1	3	<1	
2020	72	<u>839</u>	483	10	324	334	9	56	66	4	8	64	55	1	32	33	1	4	<1	
2021	93	<u>984</u>	589	10	433	443	10	73	83	4	10	87	75	1	44	45	1	6	<1	
2022	126	<u>1,377</u>	990	12	577	587	12	93	105	8	13	104	111	1	53	54	1	7	<1	
2023	261	<u>2,299</u>	1,794	27	816	840	27	132	155	19	24	191	189	2	74	76	2	10	1	
2024	391	<u>3,529</u>	2,439	46	1,100	1,146	44	186	230	22	32	239	220	3	87	90	3	12	1	
2025	355	<u>3,473</u>	2,272	42	1,152	1,193	41	187	227	21	26	188	171	3	59	62	3	9	1	
2026	258	<u>2,161</u>	1,440	28	644	672	27	125	152	16	24	167	152	3	53	56	3	8	1	
2027	270	<u>2,410</u>	1,631	32	718	750	31	133	164	21	21	152	130	3	59	62	3	9	1	
2028	107	<u>1,025</u>	632	7	503	510	7	93	100	6	5	37	34	<1	28	28	<1	4	<1	
2029	22	<u>331</u>	164	2	171	173	2	38	40	3	<1	3	3	<1	3	3	<1	<1	<1	
<i>Thresholds</i>	<i>-</i>	<i>85</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	

San Joaquin Valley Air Pollution Control District											San Joaquin Valley Air Pollution Control District									
Year	ROG	NO _x	CO	PM10			PM2.5			SO ₂	ROG	NO _x	CO	PM10			PM2.5			SO ₂
				Exhaust	Dust	Total	Exhaust	Dust	Total					Exhaust	Dust	Total	Exhaust	Dust	Total	
2016	0	0	0	0	29	29	0	4	4	0	0	0	0	0	2	2	0	<1	<1	0
2017	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2018	28	135	194	2	108	111	2	13	16	1	1	6	9	<1	10	11	<1	1	1	<1
2019	113	850	820	10	221	231	9	28	37	3	10	<u>71</u>	68	1	16	<u>17</u>	1	2	3	<1
2020	195	1,463	1,375	19	348	367	18	42	60	5	<u>17</u>	<u>122</u>	119	1	31	<u>32</u>	1	4	5	<1
2021	273	2,105	1,919	29	710	739	28	83	110	7	<u>26</u>	<u>190</u>	190	2	49	<u>51</u>	2	6	8	1
2022	214	1,453	1,597	17	307	324	16	39	55	5	<u>25</u>	<u>162</u>	183	2	29	<u>31</u>	2	4	6	1
2023	192	1,234	1,418	13	216	229	13	28	41	4	<u>22</u>	<u>132</u>	161	1	15	<u>17</u>	1	2	3	<1
2024	182	1,098	1,322	11	163	174	11	22	32	4	<u>21</u>	<u>121</u>	148	1	15	<u>16</u>	1	2	3	<1
2025	152	890	1,050	9	133	141	8	18	26	3	<u>13</u>	<u>80</u>	91	1	12	13	1	2	2	<1
2026	104	638	691	5	87	93	5	11	16	2	5	<u>32</u>	31	<1	3	3	<1	<1	1	<1
2027	12	93	99	2	30	33	2	4	6	<1	<1	<1	1	1	<1	1	1	<1	1	<1
2028	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2029	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<i>Thresholds</i>	-	-	-	-	-	-	-	-	-	-	<i>10</i>	<i>10</i>	-	-	-	<i>15</i>	-	-	<i>15</i>	-
Yolo Solano Air Quality Management District											Yolo Solano Air Quality Management District									
Year	ROG	NO _x	CO	PM10			PM2.5			SO ₂	ROG	NO _x	CO	PM10			PM2.5			SO ₂
				Exhaust	Dust	Total	Exhaust	Dust	Total					Exhaust	Dust	Total	Exhaust	Dust	Total	
2016	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2017	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2018	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2019	4	94	20	<1	26	26	<1	7	7	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
2020	4	94	20	<1	26	26	<1	7	7	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
2021	6	144	31	<1	26	40	<1	10	11	1	<1	3	1	<1	1	1	<1	<1	<1	<1
2022	10	260	59	1	75	75	1	19	20	2	<1	<u>11</u>	2	<1	3	3	<1	1	1	<1
2023	13	292	78	1	105	<u>106</u>	1	27	28	2	<1	10	3	<1	3	3	<1	1	1	<1
2024	13	286	78	1	105	<u>106</u>	1	27	28	2	<1	9	2	<1	3	3	<1	1	1	<1
2025	13	268	75	1	101	<u>102</u>	1	26	27	2	<1	6	2	<1	2	2	<1	1	1	<1
2026	10	214	61	1	83	<u>84</u>	1	21	22	2	<1	6	2	<1	2	2	<1	1	1	<1
2027	10	208	61	1	83	<u>84</u>	1	21	22	2	<1	6	2	<1	2	2	<1	1	1	<1
2028	8	151	45	1	61	62	1	16	16	1	<1	6	2	<1	2	2	<1	1	1	<1
2029	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<i>Thresholds</i>	-	-	-	-	-	<i>80</i>	-	-	-	-	<i>10</i>	<i>10</i>	-	-	-	-	-	-	-	-

1 Operation and maintenance activities under Alternative 7 would result in emissions of ROG, NO_x, CO,
2 PM10, PM2.5, and SO₂. Emissions were quantified for both ELT and LLT conditions, although
3 activities would take place annually until project decommissioning. Future emissions, in general, are
4 anticipated to lessen because of continuing improvements in vehicle and equipment engine
5 technology.

6 Table 22-132 summarizes criteria pollutant emissions associated with operation of Alternative 7 in
7 the BAAQMD, SMAQMD, and SJVAPCD in pounds per day and tons per year (no operational
8 emissions would be generated in the YSAMQD). Although emissions are presented in different units
9 (pounds and tons), the amounts of emissions are identical (i.e., 2,000 pounds is identical to 1 ton).
10 Summarizing emissions in both pounds per day and tons per year is necessary to evaluate project-
11 level effects against the appropriate air district thresholds, which are given in both pounds and tons
12 (see Table 22-8).

13 **Table 22-132. Criteria Pollutant Emissions from Operation of Alternative 7 (pounds per day and tons**
14 **per year)**

Condition	Maximum Daily Emissions (pounds/day)						Annual Emissions (tons/year)					
	Bay Area Air Quality Management District						Bay Area Air Quality Management District					
	ROG	NO _x	CO	PM10	PM2.5	SO ₂	ROG	NO _x	CO	PM10	PM2.5	SO ₂
ELT	3	19	32	6	2	<1	0.01	0.08	0.14	0.02	0.01	<0.01
LLT	3	16	31	6	1	<1	0.01	0.07	0.14	0.02	0.01	<0.01
<i>Thresholds</i>	<i>54</i>	<i>54</i>	<i>-</i>	<i>82</i>	<i>82</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>
Condition	Sacramento Metropolitan Air Quality Management District						Sacramento Metropolitan Air Quality Management District					
	ROG	NO _x	CO	PM10	PM2.5	SO ₂	ROG	NO _x	CO	PM10	PM2.5	SO ₂
ELT	4	24	43	7	2	<1	0.14	0.82	1.69	0.28	0.08	<0.01
LLT	3	20	41	7	2	<1	0.12	0.69	1.61	0.27	0.07	<0.01
<i>Thresholds</i>	<i>65</i>	<i>65</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>
Condition	San Joaquin Valley Air Pollution Control District						San Joaquin Valley Air Pollution Control District					
	ROG	NO _x	CO	PM10	PM2.5	SO ₂	ROG	NO _x	CO	PM10	PM2.5	SO ₂
ELT	3	19	36	6	2	<1	0.01	0.07	0.13	0.02	<0.01	<0.01
LLT	3	16	33	6	1	<1	0.01	0.06	0.12	0.01	<0.01	<0.01
<i>Thresholds</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>10</i>	<i>10</i>	<i>-</i>	<i>15</i>	<i>15</i>	<i>-</i>

15
16 **Impact AQ-1: Generation of Criteria Pollutants in Excess of the SMAQMD Regional Thresholds**
17 **during Construction of the Proposed Water Conveyance Facility**

18 **NEPA Effects:** As shown in Table 22-131, construction emissions would exceed SMAQMD's daily NO_x
19 threshold for all years between 2018 and 2029, even with implementation of environmental
20 commitments (see Appendix 3B, *Environmental Commitments*). All other pollutants would be below
21 air district thresholds and therefore would not result in an adverse air quality effect.

22 Since NO_x is a precursor to ozone and PM, exceedances of SMAQMD's daily NO_x threshold could
23 impact both regional ozone and PM formation, which could worsen regional air quality and air basin
24 attainment of the NAAQS and CAAQS.

1 While equipment could operate at any work area identified for this alternative, the highest level of
 2 NO_x emissions in the SMAQMD is expected to occur at those sites where the duration and intensity
 3 of construction activities would be greatest. This includes all intake and intake pumping plant sites
 4 along the east bank of the Sacramento River, as well as the intermediate forebay (and pumping
 5 plant) site west of South Stone Lake and east of the Sacramento River.

6 Environmental commitments will reduce construction-related emissions; however, as shown in
 7 Table 22-131, NO_x emissions would still exceed SMAQMD's threshold identified in Table 22-8 and
 8 would result in an adverse effect to air quality. Mitigation Measures AQ-1a and AQ-1b would be
 9 available to reduce NO_x emissions, and would thus address regional effects related to secondary
 10 ozone and PM formation.

11 **CEQA Conclusion:** NO_x emissions generated during construction would exceed SMAQMD regional
 12 threshold identified in Table 22-8. Since NO_x is a precursor to ozone and PM, exceedances of
 13 SMAQMD's daily NO_x threshold could impact both regional ozone and PM formation. SMAQMD's
 14 regional emissions thresholds (Table 22-8) and PM₁₀ screening criteria have been adopted to
 15 ensure projects do not hinder attainment of the CAAQS or NAAQS. The impact of generating NO_x
 16 emissions in excess of local air district thresholds would therefore violate applicable air quality
 17 standards in the Study area and could contribute to or worsen an existing air quality conditions.
 18 This would be a significant impact. Mitigation Measures AQ-1a and AQ-1b would be available to
 19 reduce NO_x emissions to a less-than-significant level by offsetting emissions to quantities below
 20 SMAQMD CEQA thresholds (see Table 22-8).

21 **Mitigation Measure AQ-1a: Mitigate and Offset Construction-Generated Criteria Pollutant**
 22 **Emissions within the SFNA to Net Zero (0) for Emissions in Excess of General Conformity**
 23 **De Minimis Thresholds (Where Applicable) and to Quantities below Applicable CEQA**
 24 **Thresholds for Other Pollutants**

25 Please see Mitigation Measure AQ-1a under Impact AQ-1 in the discussion of Alternative 1A.

26 **Mitigation Measure AQ-1b: Develop an Alternative or Complementary Offsite Mitigation**
 27 **Program to Mitigate and Offset Construction-Generated Criteria Pollutant Emissions**
 28 **within the SFNA to Net Zero (0) for Emissions in Excess of General Conformity De Minimis**
 29 **Thresholds (Where Applicable) and to Quantities below Applicable CEQA Thresholds for**
 30 **Other Pollutants**

31 Please see Mitigation Measure AQ-1b under Impact AQ-1 in the discussion of Alternative 1A.

32 **Impact AQ-2: Generation of Criteria Pollutants in Excess of the YSAQMD Regional Thresholds**
 33 **during Construction of the Proposed Water Conveyance Facility**

34 **NEPA Effects:** As shown in Table 22-131, construction emissions would exceed YSAQMD regional
 35 thresholds for the following pollutants and years, even with implementation of environmental
 36 commitments (see Appendix 3B, *Environmental Commitments*). All other pollutants would be below
 37 air district thresholds and therefore would not result in an adverse air quality effect.

- 38 ● NO_x: 2022
- 39 ● PM₁₀: 2023–2027

1 Since NO_x is a precursor to ozone and NO_x is a precursor to PM, exceedances of YSAQMD's NO_x
 2 threshold could impact both regional ozone and PM formation, which could worsen regional air
 3 quality and air basin attainment of the NAAQS and CAAQS. Similarly, exceedances of YSAQMD's
 4 PM10 threshold could impede attainment of the NAAQS and CAAQS for PM10. All emissions
 5 generated within YSAQMD are a result of haul truck movement for equipment and material delivery.

6 Environmental commitments outlined in Appendix 3B, *Environmental Commitments*, will reduce
 7 construction-related emissions; however, as shown in Table 22-131, NO_x and PM10 emissions
 8 would still exceed the applicable YSAQMD thresholds identified in Table 22-8 and result in an
 9 adverse regional effect to air quality. Mitigation Measures AQ-1a and AQ-1b are available to reduce
 10 NO_x and PM10 emissions, and would thus address regional effects related to secondary ozone and
 11 PM formation.

12 **CEQA Conclusion:** Emissions of NO_x and PM10 generated during construction would exceed
 13 YSAQMD's regional thresholds identified in Table 22-8. Since NO_x is a precursor to ozone and NO_x is
 14 a precursor to PM, exceedances of YSAQMD's NO_x threshold could impact both regional ozone and
 15 PM formation, which could worsen regional air quality and air basin attainment of the NAAQS and
 16 CAAQS. Similarly, exceedances of YSAQMD's PM10 threshold could impede attainment of the NAAQS
 17 and CAAQS for PM10. YSAQMD's regional emissions thresholds (Table 22-8) have been adopted to
 18 ensure projects do not hinder attainment of the CAAQS or NAAQS. The impact of generating NO_x and
 19 PM10 in excess of local air district regional thresholds would therefore violate applicable air quality
 20 standards in the study area and could contribute to or worsen an existing air quality conditions. This
 21 would be a significant impact. Mitigation Measures AQ-1a and AQ-1b would be available to reduce
 22 NO_x and PM10 emissions to a less-than-significant level by offsetting emissions to quantities below
 23 YSAQMD CEQA thresholds (see Table 22-8).

24 **Mitigation Measure AQ-1a: Mitigate and Offset Construction-Generated Criteria Pollutant**
 25 **Emissions within the SFNA to Net Zero (0) for Emissions in Excess of General Conformity**
 26 ***De Minimis* Thresholds (Where Applicable) and to Quantities below Applicable CEQA**
 27 **Thresholds for Other Pollutants**

28 Please see Mitigation Measure AQ-1a under Impact AQ-1 in the discussion of Alternative 1A.

29 **Mitigation Measure AQ-1b: Develop an Alternative or Complementary Offsite Mitigation**
 30 **Program to Mitigate and Offset Construction-Generated Criteria Pollutant Emissions**
 31 **within the SFNA to Net Zero (0) for Emissions in Excess of General Conformity *De Minimis***
 32 **Thresholds (Where Applicable) and to Quantities below Applicable CEQA Thresholds for**
 33 **Other Pollutants**

34 Please see Mitigation Measure AQ-1b under Impact AQ-1 in the discussion of Alternative 1A.

35 **Impact AQ-3: Generation of Criteria Pollutants in Excess of the BAAQMD Regional Thresholds**
 36 **during Construction of the Proposed Water Conveyance Facility**

37 **NEPA Effects:** As shown in Table 22-131, construction emissions would exceed BAAQMD's daily
 38 thresholds for the following pollutants and years, even with implementation of environmental
 39 commitments. All other pollutants would be below air district thresholds and therefore would not
 40 result in an adverse air quality effect.

- 41 ● ROG: 2023–2027

1 • NO_x: 2018–2029

2 Since ROG and NO_x are precursors to ozone and NO_x is a precursor to PM, exceedances of BAAQMD’s
3 ROG and NO_x thresholds could impact both regional ozone and PM formation, which could worsen
4 regional air quality and air basin attainment of the NAAQS and CAAQS.

5 While equipment could operate at any work area identified for this alternative, the highest level of
6 ROG and NO_x emissions in the BAAQMD are expected to occur at those sites where the duration and
7 intensity of construction activities would be greatest, including the site of the Byron Tract Forebay
8 adjacent to and south of Clifton Court Forebay.

9 Environmental commitments outlined in Appendix 3B, *Environmental Commitments*, will reduce
10 construction-related emissions; however, as shown in Table 22-131, ROG and NO_x emissions would
11 still exceed the applicable air district thresholds identified in Table 22-8 and would result in an
12 adverse effect to air quality. Mitigation Measures AQ-3a and AQ-3b are available to reduce ROG and
13 NO_x emissions, and would thus address regional effects related to secondary ozone and PM
14 formation.

15 **CEQA Conclusion:** Emissions of ROG and NO_x generated during construction would exceed BAAQMD
16 thresholds identified in Table 22-8. Since ROG and NO_x are precursors to ozone and NO_x is a
17 precursor to PM, exceedances of BAAQMD’s ROG and NO_x thresholds could impact both regional
18 ozone and PM formation. BAAQMD’s regional emissions thresholds (Table 22-8) have been adopted
19 to ensure projects do not hinder attainment of the CAAQS or NAAQS. The impact of generating ROG
20 and NO_x emissions in excess of local air district thresholds would therefore violate applicable air
21 quality standards in the Study area and could contribute to or worsen an existing air quality
22 conditions. This would be a significant impact. Mitigation Measures AQ-3a and AQ-3b would be
23 available to reduce ROG and NO_x emissions to a less-than-significant level by offsetting emissions to
24 quantities below BAAQMD CEQA thresholds (see Table 22-8).

25 **Mitigation Measure AQ-3a: Mitigate and Offset Construction-Generated Criteria Pollutant**
26 **Emissions within BAAQMD/SFBAAB to Net Zero (0) for Emissions in Excess of General**
27 **Conformity *De Minimis* Thresholds (Where Applicable) and to Quantities below**
28 **Applicable BAAQMD CEQA Thresholds for Other Pollutants**

29 Please see Mitigation Measure AQ-3a under Impact AQ-3 in the discussion of Alternative 1A.

30 **Mitigation Measure AQ-3b: Develop an Alternative or Complementary Offsite Mitigation**
31 **Program to Mitigate and Offset Construction-Generated Criteria Pollutant Emissions**
32 **within the BAAQMD/SFBAAB to Net Zero (0) for Emissions in Excess of General**
33 **Conformity *De Minimis* Thresholds (Where Applicable) and to Quantities below**
34 **Applicable BAAQMD CEQA Thresholds for Other Pollutants**

35 Please see Mitigation Measure AQ-3b under Impact AQ-3 in the discussion of Alternative 1A.

36 **Impact AQ-4: Generation of Criteria Pollutants in Excess of the SJVAPCD Regional Thresholds**
37 **during Construction of the Proposed Water Conveyance Facility**

38 **NEPA Effects:** As shown in Table 22-131, construction emissions would exceed SJVAPCD’s regional
39 thresholds for the following years and pollutants, even with implementation of environmental
40 commitments. All other pollutants would be below air district thresholds and therefore would not
41 result in an adverse air quality effect.

- 1 • ROG: 2020–2025
- 2 • NO_x: 2019–2026
- 3 • PM10: 2019–2024

4 Since ROG and NO_x are precursors to ozone and NO_x is a precursor to PM, exceedances of SJVAPCD's
5 ROG and NO_x thresholds could impact both regional ozone and PM formation, which could worsen
6 regional air quality and air basin attainment of the NAAQS and CAAQS. Similarly, exceedances of
7 SJVAPCD's PM10 threshold could impede attainment of the NAAQS and CAAQS for PM10.

8 While equipment could operate at any work area identified for this alternative, the highest level of
9 ROG, NO_x, and PM10 emissions in the SJVAPCD is expected to occur at those sites where the
10 duration and intensity of construction activities would be greatest. This includes all temporary and
11 permanent utility sites, as well as all construction sites along the pipeline/tunnel conveyance
12 alignment. For a map of the proposed tunnel alignment, see Mapbook Figure M3-1.

13 Environmental commitments outlined in Appendix 3B, *Environmental Commitments*, will reduce
14 construction-related emissions; however, as shown in Table 22-131, ROG, NO_x, and PM10 emissions
15 would still exceed SJVAPCD's thresholds identified in Table 22-8 and would result in an adverse
16 effect to air quality. Mitigation Measures AQ-4a and AQ-4b are available to reduce ROG, NO_x, and
17 PM10 emissions, and would thus address regional effects related to secondary ozone and PM
18 formation.

19 **CEQA Conclusion:** Emissions of ROG, NO_x, and PM10 generated during construction would exceed
20 SJVAPCD's annual significance threshold identified in Table 22-8. Since ROG and NO_x are precursors
21 to ozone and NO_x is a precursor to PM, exceedances of SJVAPCD's ROG and NO_x thresholds could
22 impact both regional ozone and PM formation, which could worsen regional air quality and air basin
23 attainment of the NAAQS and CAAQS. Similarly, exceedances of SJVAPCD's PM10 threshold could
24 impede attainment of the NAAQS and CAAQS for PM10. SJVAPCD's regional emissions thresholds
25 (Table 22-8) have been adopted to ensure projects do not hinder attainment of the CAAQS or
26 NAAQS. The impact of generating ROG, NO_x, and PM10 emissions in excess of local air district
27 thresholds would therefore violate applicable air quality standards in the Study area and could
28 contribute to or worsen an existing air quality conditions. This would be a significant impact.
29 Mitigation Measures AQ-4a and AQ-4b would be available to reduce ROG, NO_x, and PM10 emissions
30 to a less-than-significant level.

31 **Mitigation Measure AQ-4a: Mitigate and Offset Construction-Generated Criteria Pollutant**
32 **Emissions within SJVAPCD/SJVAB to Net Zero (0) for Emissions in Excess of General**
33 **Conformity *De Minimis* Thresholds (Where Applicable) and to Quantities below**
34 **Applicable SJVAPCD CEQA Thresholds for Other Pollutants**

35 Please see Mitigation Measure AQ-4a under Impact AQ-4 in the discussion of Alternative 1A.

36 **Mitigation Measure AQ-4b: Develop an Alternative or Complementary Offsite Mitigation**
37 **Program to Mitigate and Offset Construction-Generated Criteria Pollutant Emissions**
38 **within the SJVAPCD/SJVAB to Net Zero (0) for Emissions in Excess of General Conformity**
39 ***De Minimis* Thresholds (Where Applicable) and to Quantities below Applicable SJVAPCD**
40 **CEQA Thresholds for Other Pollutants**

41 Please see Mitigation Measure AQ-4b under Impact AQ-4 in the discussion of Alternative 1A.

1 **Impact AQ-5: Generation of Criteria Pollutants in Excess of the SMAQMD Regional Thresholds**
 2 **from Operation and Maintenance of the Proposed Water Conveyance Facility**

3 **NEPA Effects:** Operations and maintenance in SMAQMD could include both routine activities and
 4 yearly maintenance. Daily activities at all pumping plants and intakes are covered by maintenance,
 5 management, repair, and operating crews. Yearly maintenance would include annual, tunnel
 6 dewatering, and sediment removal (see Appendix 22A, *Air Quality Analysis Methodology*, for
 7 additional detail). The highest concentration of operational emissions in the SMAQMD are expected
 8 at intake and intake pumping plant sites along the east bank of the Sacramento River, as well as at
 9 the intermediate forebay (and pumping plant) site west of South Stone Lake and east of the
 10 Sacramento River. As shown in Table 22-132, operation and maintenance activities under
 11 Alternative 7 would not exceed SMAQMD's regional thresholds of significance and there would be no
 12 adverse effect (see Table 22-8). Accordingly, project operations under Alternative 7 would not
 13 contribute to or worsen existing air quality exceedances. There would be no adverse effect.

14 **CEQA Conclusion:** Emissions generated during operation and maintenance activities would not
 15 exceed SMAQMD regional thresholds for criteria pollutants. SMAQMD's regional emissions
 16 thresholds (Table 22-8) have been adopted to ensure projects do not hinder attainment of the
 17 CAAQS or NAAQS. The impact of generating emissions in excess of local air district would therefore
 18 violate applicable air quality standards in the Study area and could contribute to or worsen an
 19 existing air quality conditions. Because project operations would not exceed SMAQMD regional
 20 thresholds, the impact would be less than significant. No mitigation is required.

21 **Impact AQ-6: Generation of Criteria Pollutants in Excess of the YSAQMD Regional Thresholds**
 22 **from Operation and Maintenance of the Proposed Water Conveyance Facility**

23 **NEPA Effects:** Alternative 7 would not construct any permanent features in the YSAQMD that would
 24 require routine operations and maintenance. No operational emissions would be generated in the
 25 YSAQMD. Consequently, operation of Alternative 7 would neither exceed the YSAQMD thresholds of
 26 significance nor result in an adverse effect on air quality.

27 **CEQA Conclusion:** No operational or maintenance emissions generated by the alternative would
 28 occur in YSAQMD and, therefore, YSAQMD's regional thresholds would not be exceeded (see Table
 29 22-8). This impact would be less than significant. No mitigation is required.

30 **Impact AQ-7: Generation of Criteria Pollutants in Excess of the BAAQMD Regional Thresholds**
 31 **from Operation and Maintenance of the Proposed Water Conveyance Facility**

32 **NEPA Effects:** Operations and maintenance in BAAQMD could include annual inspections, tunnel
 33 dewatering, and sediment removal (see Appendix 22A, *Air Quality Analysis Methodology*, for
 34 additional detail). The highest concentration of operational emissions in the BAAQMD are expected
 35 at the Byron Tract Forebay (including control gates), which is adjacent to and south of Clifton Court
 36 Forebay. As shown in Table 22-132, operation and maintenance activities under Alternative 7 would
 37 not exceed BAAQMD's regional thresholds of significance (see Table 22-8). Thus, project operations
 38 under Alternative 7 would not contribute to or worsen existing air quality exceedances. There
 39 would be no adverse effect.

40 **CEQA Conclusion:** Emissions generated during operation and maintenance activities would not
 41 exceed BAAQMD regional thresholds for criteria pollutants. BAAQMD's regional emissions
 42 thresholds (Table 22-8) have been adopted to ensure projects do not hinder attainment of the

1 CAAQS or NAAQS. The impact of generating emissions in excess of local air district thresholds would
 2 violate applicable air quality standards in the Study area and could contribute to or worsen an
 3 existing air quality conditions. Because project operations would not exceed BAAQMD regional
 4 thresholds, the impact would be less than significant. No mitigation is required.

5 **Impact AQ-8: Generation of Criteria Pollutants in Excess of the SJVAPCD Regional Thresholds**
 6 **from Operation and Maintenance of the Proposed Water Conveyance Facility**

7 **NEPA Effects:** Operations and maintenance in SJVAPCD could include annual inspections and tunnel
 8 dewatering (see Appendix 22A, *Air Quality Analysis Methodology*, for additional detail). The highest
 9 concentration of operational emissions in the SJVAPCD is expected at construction sites along the
 10 pipeline/tunnel conveyance alignment. For a map of the proposed tunnel alignment, see Mapbook
 11 Figure M3-1. As shown in Table 22-132, operation and maintenance activities under Alternative 7
 12 would not exceed SJVAPCD's regional thresholds of significance (see Table 22-8). Accordingly,
 13 project operations under Alternative 7 would not contribute to or worsen existing air quality
 14 exceedances. There would be no adverse effect.

15 **CEQA Conclusion:** Emissions generated during operation and maintenance activities would not
 16 exceed SJVAPCD's regional thresholds of significance. SJVAPCD's regional emissions thresholds
 17 (Table 22-8) have been adopted to ensure projects do not hinder attainment of the CAAQS or
 18 NAAQS. The impact of generating emissions in excess of local air district thresholds would violate
 19 applicable air quality standards in the Study area and could contribute to or worsen an existing air
 20 quality conditions. Because project operations would not exceed SJVAPCD regional thresholds, the
 21 impact would be less than significant. No mitigation is required.

22 **Impact AQ-9: Exposure of Sensitive Receptors to Health Hazards from Localized Particulate**
 23 **Matter in Excess of SMAQMD's Health-Based Concentration Thresholds**

24 **NEPA Effects:** Alternative 7 is similar to Alternative 4 and involves the development of two less
 25 intakes (approximately 40% volumetric reduction) as compared to Alternative 1A. As such, the
 26 emissions generated by construction of Alternative 7 would be lower than Alternative 1A due to less
 27 construction activities. Localized health risk impacts resulting from emissions from Intakes 1 and 4
 28 would be less or not occur due to absence in the development of these project features. Based on the
 29 emissions inventory conducted for the air quality analysis, development of Alternative 7 would
 30 result in 22% less PM10 and PM2.5 emissions as compared with Alternative 1A.

31 All annual PM10 and PM2.5 concentrations were found to be less than SMAQMD's annual thresholds
 32 for Alternative 1A. Because Alternative 7 would require less construction activity and generate
 33 fewer emissions than Alternative 1A, annual PM10 and PM2.5 concentrations from the development
 34 of Alternative 7 would also be less than the respective SMAQMD annual thresholds. However, as
 35 shown in Table 22-14, the maximum predicted 24-hour PM10 concentration for Alternative 1A
 36 would exceed SMAQMD's threshold of 2.5 $\mu\text{g}/\text{m}^3$. The modeled exceedances occur at 225 receptor
 37 locations near intakes and intake work areas. Because Alternative 7 would not involve the
 38 development of Intakes 1 and 4, emissions contributions from these intakes would not occur. It is
 39 anticipated that Alternative 7 would still result in 24-hour PM10 exceedances, but at fewer receptor
 40 locations than Alternative 1A. The exceedances would be temporary and occur intermittently due to
 41 soil disturbance. Accordingly, this alternative would expose a sensitive receptor to adverse levels of
 42 localized particulate matter concentrations. Mitigation Measure AQ-9 is available to address this
 43 effect.

1 **CEQA Conclusion:** Respirable particulates pose a human health hazard by bypassing the defenses
 2 within the mucous ciliary system and entering deep lung tissue. Construction of Alternative 7 would
 3 result in the short-term exposure of receptors to PM10 concentrations that exceed SMAQMD
 4 threshold. This would be a significant impact. Mitigation Measure AQ-9 outlines a tiered strategy to
 5 reduce PM10 concentrations and public exposure to a less-than-significant level.

6 **Mitigation Measure AQ-9: Implement Measures to Reduce Re-Entrained Road Dust and**
 7 **Receptor Exposure to PM2.5 and PM10**

8 Please see Mitigation Measure AQ-9 under Impact AQ-9 in the discussion of Alternative 1A.

9 **Impact AQ-10: Exposure of Sensitive Receptors to Health Hazards from Localized Particulate**
 10 **Matter in Excess of YSAQMD's Health-Based Concentration Thresholds**

11 **NEPA Effects:** Table 22-15 under Alternative 1A shows that the maximum predicted PM2.5 and
 12 PM10 concentrations are less than YSAQMD's adopted thresholds. Because Alternative 7 would
 13 require less construction activity and generate fewer emissions than Alternative 1A, annual PM10
 14 and PM2.5 concentrations from the development of Alternative 7 would also be less than the
 15 respective YSAQMD annual thresholds. The project would also implement all air district-
 16 recommended onsite fugitive dust controls, such as regular watering. Accordingly, this alternative
 17 would not expose sensitive receptors to adverse levels of localized particulate matter
 18 concentrations.

19 **CEQA Conclusion:** Respirable particulates pose a human health hazard by bypassing the defenses
 20 within the mucous ciliary system and entering deep lung tissue. Construction of Alternative 1A
 21 would result in PM2.5 and PM10 concentrations at receptor locations that are below the significance
 22 thresholds established by the YSAQMD. Since Alternative 7 results in fewer overall emissions,
 23 localized particulate matter concentrations at analyzed receptors would not result in significant
 24 human health impacts. No mitigation is required.

25 **Impact AQ-11: Exposure of Sensitive Receptors to Health Hazards from Localized Particulate**
 26 **Matter in Excess of BAAQMD's Health-Based Concentration Thresholds**

27 **NEPA Effects:** Table 22-16 under Alternative 1A shows that the maximum predicted PM2.5
 28 concentrations are less than BAAQMD's adopted thresholds. Because Alternative 7 would require
 29 less construction activity and generate fewer emissions than Alternative 1A, PM2.5 concentrations
 30 from the development of Alternative 7 would also be less than the respective BAAQMD annual
 31 thresholds. The project would also implement all air district-recommended onsite fugitive dust
 32 controls, such as regular watering. Accordingly, this alternative would not expose sensitive
 33 receptors to adverse levels of localized particulate matter concentrations.

34 **CEQA Conclusion:** Respirable particulates pose a human health hazard by bypassing the defenses
 35 within the mucous ciliary system and entering deep lung tissue. Construction of Alternative 1A
 36 would result in PM2.5 concentrations at receptor locations that are below the significance
 37 thresholds established by the BAAQMD. Since Alternative 7 results in fewer overall emissions,
 38 localized particulate matter concentrations at analyzed receptors would not result in significant
 39 human health impacts. No mitigation is required.

1 **Impact AQ-12: Exposure of Sensitive Receptors to Health Hazards from Localized Particulate**
 2 **Matter in Excess of SJVAPCD's Health-Based Concentration Thresholds**

3 *NEPA Effects:* Table 22-17 under Alternative 1A shows that with exception of 24-hour PM10,
 4 maximum predicted PM2.5 and PM10 concentrations are less than SJVAPCD's adopted thresholds.
 5 The 24-hour PM10 concentrations attributable to the project would exceed the SJVAPCD's
 6 significance threshold at one receptor location. Emissions from the tunnel construction activities
 7 and concrete batch plant contribute to the exceedance at this location. Though Alternative 7 would
 8 result in less construction activities than Alternative 1A, it is anticipated that the receptor exposed
 9 to emissions from the concrete batch plant and tunnel activities would remain impacted.
 10 Accordingly, this alternative would expose a sensitive receptor to adverse levels of localized
 11 particulate matter concentrations. Mitigation Measure AQ-9 is available to address this effect.

12 *CEQA Conclusion:* Respirable particulates pose a human health hazard by bypassing the defenses
 13 within the mucous ciliary system and entering deep lung tissue. Construction of Alternative 7 would
 14 result in the short-term exposure of receptors to PM10 concentrations that exceed SJVAPCD's
 15 threshold. This would be a significant impact. Mitigation Measure AQ-9 outlines a tiered strategy to
 16 reduce PM10 concentrations and public exposure to a less-than-significant level.

17 **Mitigation Measure AQ-9: Implement Measures to Reduce Re-Entrained Road Dust and**
 18 **Receptor Exposure to PM2.5 and PM10**

19 Please see Mitigation Measure AQ-9 under Impact AQ-9 in the discussion of Alternative 1A.

20 **Impact AQ-13: Exposure of Sensitive Receptors to Health Hazards from Localized Carbon**
 21 **Monoxide**

22 *NEPA Effects:* Continuous engine exhaust may elevate localized CO concentrations. Receptors
 23 exposed to these CO "hot-spots" may have a greater likelihood of developing adverse health effects
 24 (as described in Section 22.1.2). CO hot-spots are typically observed at heavily congested
 25 intersections where a substantial number of gasoline-powered vehicles idle for prolonged durations
 26 throughout the day. Construction sites are less likely to result in localized CO hot-spots due to the
 27 nature of construction activities (Sacramento Metropolitan Air Quality Management District 2014),
 28 which normally utilize diesel-powered equipment for intermittent or short durations. Moreover,
 29 construction sites must comply with the Occupational Safety and Health Administration's (OSHA) CO
 30 exposure standards for onsite workers. Unlike regional pollutants (e.g., ROG and NO_x), CO
 31 concentrations also dissipate as a function of distance and will therefore be lower at offsite receptor
 32 locations. Accordingly, given that construction activities typically do not result in CO hot-spots,
 33 onsite concentrations must comply with OSHA standards, and CO levels dissipate as a function of
 34 distance, equipment-generated CO emissions (see Table 22-131) are not anticipated to result in
 35 adverse health hazards to sensitive receptors.

36 Construction traffic may contribute to increased roadway congestion, which could lead to conditions
 37 conducive to CO hot-spot formation. As shown in Table 19-8, the highest peak hour traffic volumes
 38 under BPBGPP—12,567 vehicles per hour—would occur on westbound Interstate 80 between

1 Suisun Valley Road and State Route 12.⁵⁹ This is about half of the congested traffic volume modeled
 2 by BAAQMD (24,000 vehicles per hour) that would be needed to contribute to a localized CO hot-
 3 spot, and less than half of the traffic volume modeled by SMAQMD (31,600 vehicles per hour). The
 4 BAAQMD's and SMAQMD's CO screening criteria were developed based on County average vehicle
 5 fleets that are primarily comprised of gasoline vehicles. Construction vehicles would be
 6 predominantly diesel trucks, which generate fewer CO emissions per idle-hour and vehicle mile
 7 traveled than gasoline-powered vehicles. Accordingly, the air district screening thresholds provide a
 8 conservative evaluation threshold for the assessment of potential CO emissions impacts during
 9 construction.

10 Based on the above analysis, even if all 12,567 vehicles on the modeled traffic segment drove
 11 through the same intersection in the peak hour, CO concentrations adjacent to the traveled way
 12 would not exceed the CAAQS or NAAQS according to BAAQMD's and SMAQMD's screening criteria.
 13 Thus, construction traffic is not anticipated to result in adverse health hazards to sensitive
 14 receptors.

15 **CEQA Conclusion:** Continuous engine exhaust may elevate localized CO concentrations. Receptors
 16 exposed to these CO "hot-spots" may have a greater likelihood of developing adverse health effects.
 17 Construction sites are less likely to result in localized CO hot-spots due to the nature of construction
 18 activities (Sacramento Metropolitan Air Quality Management District 2014), which normally utilize
 19 diesel-powered equipment for intermittent or short durations. Moreover, construction sites must
 20 comply with the OSHA CO exposure standards for onsite workers. Accordingly, given that
 21 construction activities typically do not result in CO hot-spots, onsite concentrations must comply
 22 with OSHA standards, and CO levels dissipate as a function of distance, equipment-generated CO
 23 emissions are not anticipated to result in significant health hazards to sensitive receptors. Similarly,
 24 peak-hour construction traffic on local roadways would not exceed BAAQMD's or SMAQMD's
 25 conservative screening criteria for the formation potential CO hot-spots. This impact would be less
 26 than significant. No mitigation is required.

27 **Impact AQ-14: Exposure of Sensitive Receptors to Health Hazards from Diesel Particulate**
 28 **Matter in Excess of SMAQMD's Chronic Non-Cancer and Cancer Risk Thresholds**

29 **NEPA Effects:** As shown in Table 22-19, Alternative 1A would not exceed the SMAQMD's thresholds
 30 for chronic non-cancer hazard or cancer risk. Because Alternative 7 would require less construction
 31 activity and generate fewer emissions than Alternative 1A, chronic non-cancer hazard and cancer
 32 risk from the development of Alternative 7 would also be less than the respective SMAQMD
 33 significance thresholds. Accordingly, this alternative would not expose sensitive receptors to
 34 adverse levels of DPM such as would result in chronic non-cancer hazards or cancer risk.

35 **CEQA Conclusion:** DPM generated during construction poses inhalation-related chronic non-cancer
 36 hazard and cancer risk if adjacent receptors are exposed to significant concentrations for prolonged
 37 durations. DPM generated during Alternative 7 construction would not exceed the SMAQMD's
 38 chronic non-cancer hazard or cancer risk threshold. Therefore, this impact for DPM emissions would
 39 be less than significant. No mitigation is required.

⁵⁹ The above volumes are based on the traffic analysis conducted for Alternative 1A. Since few vehicles would be required under Alternative 7, traffic impacts would likely be less than those estimated for Alternative 1A.

1 **Impact AQ-15: Exposure of Sensitive Receptors to Health Hazards from Diesel Particulate**
 2 **Matter in Excess of YSAQMD's Chronic Non-Cancer and Cancer Risk Thresholds**

3 **NEPA Effects:** As shown in Table 22-19, Alternative 1A would not exceed the YSAQMD's thresholds
 4 for chronic non-cancer hazard or cancer risk. Because Alternative 7 would require less construction
 5 activity and generate fewer emissions than Alternative 1A, chronic non-cancer hazard and cancer
 6 risk from the development of Alternative 7 would also be less than the respective YSAQMD
 7 significance thresholds. Accordingly, this alternative would not expose sensitive receptors to
 8 adverse levels of DPM such as would result in chronic non-cancer hazards or cancer risk.

9 **CEQA Conclusion:** DPM generated during construction poses inhalation-related chronic non-cancer
 10 hazard and cancer risk if adjacent receptors are exposed to significant concentrations for prolonged
 11 durations. The DPM generated during Alternative 7 construction would not exceed the YSAQMD's
 12 chronic non-cancer or cancer thresholds, and thus would not expose sensitive receptors to
 13 substantial health hazards. Therefore, this impact for DPM emissions would be less than significant.
 14 No mitigation is required.

15 **Impact AQ-16: Exposure of Sensitive Receptors to Health Hazards from Diesel Particulate**
 16 **Matter in Excess of BAAQMD's Chronic Non-Cancer and Cancer Risk Thresholds**

17 **NEPA Effects:** As shown in Table 22-20, Alternative 1A would not exceed the BAAQMD's thresholds
 18 for chronic non-cancer hazard; however, it would exceed BAAQMD's cancer risk threshold. The
 19 primary emission sources for these exceedances are from a project haul route, control structure
 20 work area and potential spoil area. While the impact of Alternative 7 would be less than Alternative
 21 1A, Alternative 7 may still expose sensitive receptors to adverse levels of carcinogenic DPM
 22 concentrations.

23 Mitigation Measure AQ-16 would be available to reduce exposure to substantial cancer risk by
 24 relocating affected receptors. Although Mitigation Measure AQ-16 would reduce the severity of this
 25 effect, the BDCP proponents are not solely responsible for implementation of the measure. If a
 26 landowner chooses not to accept DWR's offer of relocation assistance, an adverse effect in the form
 27 excess cancer risk above air district thresholds would occur. Therefore, this effect would be adverse.
 28 If, however, all landowners accept DWR's offer of relocation assistance, effects would not be
 29 adverse.

30 **CEQA Conclusion:** DPM generated during construction poses inhalation-related chronic non-cancer
 31 hazard and cancer risk if adjacent receptors are exposed to significant concentrations for prolonged
 32 durations. The DPM generated during Alternative 7 construction would not exceed the BAAQMD's
 33 chronic non-cancer hazard threshold; however, it would exceed the BAAQMD's cancer thresholds.
 34 Therefore, this impact for DPM emissions would be significant.

35 Mitigation Measure AQ-16 would be available to reduce exposure to substantial cancer risk by
 36 relocating affected receptors. Although Mitigation Measure AQ-16 would reduce the severity of this
 37 effect, the BDCP proponents are not solely responsible for implementation of the measure. If a
 38 landowner chooses not to accept DWR's offer of relocation assistance, a significant impact in the
 39 form excess cancer risk above air district thresholds would occur. Therefore, this effect would be
 40 significant and unavoidable. If, however, all landowners accept DWR's offer of relocation assistance,
 41 the impact would be less than significant.

1 **Mitigation Measure AQ-16: Relocate Sensitive Receptors to Avoid Excess Cancer Risk**

2 Please see Mitigation Measure AQ-16 under Impact AQ-16 in the discussion of Alternative 1A.

3 **Impact AQ-17: Exposure of Sensitive Receptors to Health Hazards from Diesel Particulate**
 4 **Matter in Excess of SJVAPCD's Chronic Non-Cancer and Cancer Risk Thresholds**

5 **NEPA Effects:** Table 22-21 under Alternative 1A shows that the maximum predicted chronic non-
 6 cancer hazard and cancer risk associated with the project are less than SJVAPCD's adopted
 7 thresholds. Because Alternative 7 would require less construction activity and generate fewer
 8 emissions than Alternative 1A, chronic non-cancer hazard and cancer risk from the development of
 9 Alternative 7 would also be less than the respective SJVAPCD significance thresholds. Accordingly,
 10 this alternative would not expose sensitive receptors to adverse levels of DPM such as would result
 11 in chronic non-cancer hazards or cancer risk.

12 **CEQA Conclusion:** DPM generated during construction poses inhalation-related chronic non-cancer
 13 hazard and cancer risk if adjacent receptors are exposed to significant concentrations for prolonged
 14 durations. The DPM generated during Alternative 7 construction would not exceed the SJVAPCD's
 15 chronic non-cancer or cancer thresholds, and thus would not expose sensitive receptors to
 16 substantial pollutant concentrations. Therefore, this impact for DPM emissions would be less than
 17 significant. No mitigation is required.

18 **Impact AQ-18: Exposure of Sensitive Receptors to *Coccidioides immitis* (Valley Fever)**

19 **NEPA Effects:** As discussed under Alternative 1A, earthmoving activities during construction could
 20 release *C. immitis* spores if filaments are present and other soil chemistry and climatic conditions
 21 are conducive to spore development. Receptors adjacent to the construction area may therefore be
 22 exposed to increase risk of inhaling *C. immitis* spores and subsequent development of Valley Fever.
 23 Dust-control measures are the primary defense against infection (United States Geological Survey
 24 2000). Implementation of advanced air-district recommended fugitive dust controls outlined in
 25 Appendix 3B, *Environmental Commitments*, would avoid dusty conditions and reduce the risk of
 26 contracting Valley Fever through routine watering and other controls. Therefore, this alternative's
 27 effect of exposure of sensitive receptors to increased Valley Fever risk during construction would
 28 not be adverse.

29 **CEQA Conclusion:** Construction of the water conveyance facility would involve earthmoving
 30 activities that could release *C. immitis* spores if filaments are present and other soil chemistry and
 31 climatic conditions are conducive to spore development. Receptors adjacent to the construction area
 32 may therefore be exposed to increase risk of inhaling *C. immitis* spores and subsequent development
 33 of Valley Fever. Implementation of air-district recommended fugitive dust controls outlined in
 34 Appendix 3B, *Environmental Commitments*, would avoid dusty conditions and reduce the risk of
 35 contracting Valley Fever through routine watering and other controls. Therefore, this impact would
 36 be less than significant. No mitigation is required.

37 **Impact AQ-19: Creation of Potential Odors Affecting a Substantial Number of People during**
 38 **Construction or Operation of the Proposed Water Conveyance Facility**

39 **NEPA Effects:** As discussed under Alternative 1A, odors from construction activities would be
 40 localized and generally confined to the immediate area surrounding the construction site. Moreover,
 41 odors would be temporary and localized, and they would cease once construction activities have

1 been completed. Thus, it is not anticipated that construction of CM1 would create objectionable
2 odors from construction equipment or asphalt paving.

3 Construction of the water conveyance facility would require removal of subsurface material during
4 tunnel excavation and sediment removal. As discussed under Alternative 1A, geotechnical tests
5 indicate that VOC levels in Plan Area soils are below the method detection limits, indicating that
6 organic decay of exposed RTM and sediment will be relatively low (URS 2014). Moreover, drying
7 and stockpiling of the removed RTM and sediment will occur under aerobic conditions, which will
8 further limit any potential decomposition and associated malodorous products. Accordingly, it is not
9 anticipated that tunnel and sediment excavation would create objectionable odors.

10 Typical facilities known to produce odors include landfills, wastewater treatment plants, food
11 processing facilities, and certain agricultural activities. Alternative 7 would not result in the addition
12 of facilities associated with odors, and as such, long-term operation of the water conveyance facility
13 would not result in objectionable odors.

14 **CEQA Conclusion:** Alternative 7 would not result in the addition of major odor producing facilities.
15 Diesel emissions during construction could generate temporary odors, but these would quickly
16 dissipate and cease once construction is completed. Likewise, potential odors generated during
17 asphalt paving would be addressed through mandatory compliance with air district rules and
18 regulations. While tunnel excavation would unearth substantial quantities of RTM, geotechnical
19 tests indicate that soils in the Plan Area have relatively low organic constituents. Moreover, drying
20 and stockpiling of the removed RTM will occur under aerobic conditions, which will further limit
21 any potential decomposition and associated malodorous products. Accordingly, the impact of
22 exposure of sensitive receptors to potential odors during construction would be less than
23 significant. No mitigation is required.

24 **Impact AQ-20: Generation of Criteria Pollutants in the Excess of Federal *De Minimis***
25 **Thresholds from Construction and Operation and Maintenance of the Proposed Water**
26 **Conveyance Facility**

27 **NEPA Effects:** EPA's General Conformity Rule (40 CFR Parts 51 and 93) only applies to Federal
28 actions that are taken in EPA-designated "nonattainment" or "maintenance" areas. Accordingly, as
29 outlined in Section III.A of the General Conformity Rule, "only actions which cause emissions in
30 designated nonattainment and maintenance areas are subject to the regulations". Criteria pollutant
31 emissions resulting from construction and operation of Alternative 7 in the SFNA, SJVAB, and
32 SFBAAB are presented in Table 22-133. Exceedances of the federal *de minimis* thresholds are shown
33 in underlined text.

34 **Sacramento Federal Nonattainment Area**

35 As shown in Table 22-133, implementation of Alternative 7 would exceed the following SFNA
36 federal *de minimis* thresholds:

- 37 ● ROG: 2024–2025
- 38 ● NO_x: 2018–2028

39 ROG and NO_x are precursors to ozone and NO_x is a precursor to PM, for which the SFNA is in
40 nonattainment for the NAAQS. Since project emissions exceed the federal *de minimis* thresholds for
41 ROG and NO_x, a general conformity determination must be made to demonstrate that total direct

1 and indirect emissions of NO_x would conform to the appropriate SFNA SIP for each year of
2 construction in which the *de minimis* thresholds are exceeded.

3 NO_x is also a precursor to PM and can contribute to PM formation. As discussed above, Sacramento
4 County is currently designated maintenance for the PM10 NAAQS and portions of the SVAB are
5 designated nonattainment for the PM2.5 NAAQS. NO_x emissions in excess of 100 tons per year in
6 Sacramento County trigger a secondary PM10 precursor threshold, whereas NO_x emissions in excess
7 of 100 tons per year in the SVAB trigger a secondary PM2.5 precursor threshold. Since NO_x
8 emissions can contribute to PM formation, NO_x emissions in excess of these secondary precursor
9 thresholds could conflict with the applicable PM10 and PM2.5 SIPs. Accordingly, NO_x offsets pursued
10 for the purposes of general conformity for those years in which NO_x emissions exceed 100 tons must
11 occur within the federally designated PM2.5 nonattainment and PM10 maintenance areas of the
12 SVAB.

13 As shown in Table 22-131, NO_x emissions generated by construction activities in SMAQMD
14 (Sacramento County) would exceed 100 tons per year between 2022 and 2027. The project
15 therefore triggers the secondary PM10 precursor threshold, requiring all NO_x offsets for 2022
16 through 2027 to occur within Sacramento County.

17 Given the magnitude of NO_x emissions and the limited geographic scope available for offsets in 2022
18 through 2027 (Sacramento County), neither Mitigation Measures AQ-1a nor 1b could feasibly reduce
19 NO_x emissions to net zero for the purposes of general conformity.⁶⁰ This impact would be adverse.
20 In the event that Alternative 7 is selected as the APA, Reclamation, USFWS, and NMFS would need to
21 demonstrate that conformity is met for NO_x and secondary PM10 formation through a local air
22 quality modeling analysis (i.e., dispersion modeling) or other acceptable methods to ensure project
23 emissions do not cause or contribute to any new violations of the NAAQS or increase the frequency
24 or severity of any existing violations.

25 **Mitigation Measure AQ-1a: Mitigate and Offset Construction-Generated Criteria Pollutant**
26 **Emissions within the SFNA to Net Zero (0) for Emissions in Excess of General Conformity**
27 ***De Minimis* Thresholds (Where Applicable) and to Quantities below Applicable CEQA**
28 **Thresholds for Other Pollutants**

29 Please see Mitigation Measure AQ-1a under Impact AQ-1 in the discussion of Alternative 1A.

30 **Mitigation Measure AQ-1b: Develop an Alternative or Complementary Offsite Mitigation**
31 **Program to Mitigate and Offset Construction-Generated Criteria Pollutant Emissions**
32 **within the SFNA to Net Zero (0) for Emissions in Excess of General Conformity *De Minimis***
33 **Thresholds (Where Applicable) and to Quantities below Applicable CEQA Thresholds for**
34 **Other Pollutants**

35 Please see Mitigation Measure AQ-1b under Impact AQ-1 in the discussion of Alternative 1A.

⁶⁰ The secondary PM precursor thresholds are triggered through the General Conformity Regulation (40 CFR 93.153 (a)(1)). Accordingly, confinement of the geographic scope for available offsets only applies to the General Conformity determination and does not influence mitigation feasibility for Impacts AQ-1 or AQ-28.

1 **Table 22-133. Criteria Pollutant Emissions from Construction and Operation of Alternative 7 in**
 2 **Nonattainment and Maintenance Areas of the SFNA, SJVAB, and SFBAAB (tons/year)**

Year	Sacramento Federal Nonattainment Area					
	ROG	NO _x ^a	CO ^b	PM10 ^c	PM2.5	SO ₂
2016	0	0	0	0	0	0
2017	0	0	0	0	0	0
2018	3	<u>28</u>	<1	11	2	<1
2019	4	<u>25</u>	<1	23	4	<1
2020	8	<u>64</u>	1	33	5	<1
2021	10	<u>90</u>	3	45	7	<1
2022	13	<u>115</u>	5	54	9	<1
2023	25	<u>200</u>	5	76	13	1
2024	<u>32</u>	<u>248</u>	5	90	17	1
2025	<u>27</u>	<u>194</u>	3	62	12	1
2026	25	<u>173</u>	2	56	11	1
2027	21	<u>158</u>	3	62	12	1
2028	6	<u>42</u>	3	28	5	<1
2029	<1	3	<1	3	<1	<1
ELT	0.14	0.82	1.69	0.28	0.08	<0.01
LLT	0.12	0.69	1.61	0.27	0.07	<0.01
<i>De Minimis</i>	<i>25</i>	<i>25</i>	<i>100</i>	<i>100</i>	<i>100</i>	<i>100</i>
Year	San Joaquin Valley Air Basin					
	ROG	NO _x ^a	CO ^b	PM10	PM2.5	SO ₂
2016	0	0	0	2	<1	0
2017	0	0	0	0	0	0
2018	1	6	0	11	1	<1
2019	10	<u>71</u>	0	17	3	<1
2020	<u>17</u>	<u>122</u>	0	32	5	<1
2021	<u>26</u>	<u>190</u>	0	51	8	1
2022	<u>25</u>	<u>162</u>	0	31	6	1
2023	<u>22</u>	<u>132</u>	0	17	3	<1
2024	<u>21</u>	<u>121</u>	0	16	3	<1
2025	<u>13</u>	<u>80</u>	0	13	2	<1
2026	5	<u>32</u>	0	3	1	<1
2027	<1	<1	0	1	1	<1
2028	0	0	0	0	0	0
2029	0	0	0	0	0	0
ELT	0.01	0.07	0.13	0.02	<0.01	<0.01
LLT	0.01	0.06	0.12	0.01	<0.01	<0.01
<i>De Minimis</i>	<i>10</i>	<i>10</i>	<i>100</i>	<i>100</i>	<i>100</i>	<i>100</i>

Year	San Francisco Bay Area Air Basin					
	ROG	NO _x	CO ^b	PM10 ^d	PM2.5	SO ₂
2016	0	0	0	-	0	0
2017	0	0	0	-	0	0
2018	<1	2	<1	-	<1	<1
2019	2	16	1	-	1	<1
2020	3	25	1	-	1	<1
2021	4	33	2	-	2	<1
2022	5	37	3	-	2	<1
2023	8	59	4	-	5	<1
2024	12	84	5	-	6	1
2025	7	51	3	-	4	<1
2026	5	40	3	-	4	<1
2027	3	21	2	-	3	<1
2028	<1	2	1	-	1	<1
2029	<1	<1	<1	-	<1	<1
ELT	0.01	0.08	0.14	-	0.01	<0.01
LLT	0.01	0.07	0.14	-	0.01	<0.01
<i>De Minimis</i>	<i>100</i>	<i>100</i>	<i>100</i>	<i>-</i>	<i>100</i>	<i>100</i>

^a NO_x emissions in excess of 100 tons per year within federally designated PM10 and PM2.5 nonattainment or maintenance areas trigger a secondary PM10 and PM2.5 precursor threshold. NO_x emissions in excess of this secondary threshold could conflict with the applicable PM10 and PM2.5 SIPs. Accordingly, NO_x offsets pursued for the purposes of general conformity for those years in which NO_x emissions exceed 100 tons must occur within the federally designated PM2.5 nonattainment and PM10 maintenance areas, as applicable.

^b The proposed water conveyance facility is located within a federally designated CO attainment area. Accordingly, CO emissions generated by construction of CM1 are not subject to the General Conformity Rule and are excluded from the emissions summary and general conformity analysis (40 CFR Part 51 and 93, Section III.A). Emissions presented in the table are limited those generated by haul trucks, which would occur in federally designated CO maintenance area.

^c There are no federally designated PM10 maintenance areas in Yolo County. Accordingly, PM10 emissions generated by construction of CM1 in Yolo County are not subject to the General Conformity Rule and are excluded from the emissions summary and general conformity analysis for the SFNA (40 CFR Part 51 and 93, Section III.A). Emissions presented in the table are limited those generated within Sacramento County.

^d There are no federally designated PM10 nonattainment or maintenance areas in the SFBAAB. Accordingly, PM10 emissions generated by construction of CM1 are not subject to the General Conformity Rule and are excluded from the emissions summary and general conformity analysis (40 CFR Part 51 and 93, Section III.A).

1

2 **San Joaquin Valley Air Basin**

3 As shown in Table 22-133, implementation of Alternative 7 would exceed the following SJVAB
4 federal *de minimis* thresholds:

- 5 ● ROG: 2020–2025
- 6 ● NO_x: 2019–2026

1 ROG and NO_x are precursors to ozone and NO_x is a precursor to PM, for which the SJVAB is in
 2 nonattainment for the NAAQS. Since project emissions exceed the federal *de minimis* threshold for
 3 ROG and NO_x, a general conformity determination must be made to demonstrate that total direct
 4 and indirect emissions of ROG and NO_x would conform to the appropriate SJVAB SIP for each year of
 5 construction in which the *de minimis* thresholds are exceeded.

6 NO_x is also a precursor to PM and can contribute to PM formation. As discussed above, the SJVAB is
 7 currently designated maintenance for the PM₁₀ NAAQS and nonattainment for the PM_{2.5} NAAQS.
 8 NO_x emissions in excess of 100 tons per year trigger a secondary PM precursor threshold, and could
 9 conflict with the applicable PM₁₀ and PM_{2.5} SIPs. As shown in Table 22-133, NO_x emissions
 10 generated by construction activities in the SJVAB would exceed 100 tons per year between 2020 and
 11 2024. NO_x offsets pursued for the purposes of general conformity for those years in which NO_x
 12 emissions exceed 100 tons must occur within the federally designated PM_{2.5} nonattainment and
 13 PM₁₀ maintenance areas of the SJVAB, which are consistent with the larger nonattainment
 14 boundary for ozone.

15 As shown in Appendix 22E, *General Conformity Determination*, Attachment 22E-1, SJVAPCD confirms
 16 that sufficient emissions reduction credits would be available to fully offset ROG and NO_x emissions
 17 in excess of the federal *de minimis* thresholds zero through implementation of Mitigation Measures
 18 AQ-4a and 4b. Mitigation Measures AQ-4a and 4b will ensure the requirements of the mitigation and
 19 offset program are implemented and conformity requirements for ROG and NO_x are met, should
 20 Alternative 7 be selected as the APA.

21 **Mitigation Measure AQ-4a: Mitigate and Offset Construction-Generated Criteria Pollutant**
 22 **Emissions within SJVAPCD/SJVAB to Net Zero (0) for Emissions in Excess of General**
 23 **Conformity *De Minimis* Thresholds (Where Applicable) and to Quantities below**
 24 **Applicable SJVAPCD CEQA Thresholds for Other Pollutants**

25 Please see Mitigation Measure AQ-4a under Impact AQ-4 in the discussion of Alternative 1A.

26 **Mitigation Measure AQ-4b: Develop an Alternative or Complementary Offsite Mitigation**
 27 **Program to Mitigate and Offset Construction-Generated Criteria Pollutant Emissions**
 28 **within the SJVAPCD/SJVAB to Net Zero (0) for Emissions in Excess of General Conformity**
 29 ***De Minimis* Thresholds (Where Applicable) and to Quantities below Applicable SJVAPCD**
 30 **CEQA Thresholds for Other Pollutants**

31 Please see Mitigation Measure AQ-4b under Impact AQ-4 in the discussion of Alternative 1A.

32 ***San Francisco Bay Area Air Basin***

33 As shown in Table 22-133, implementation of Alternative 7 would not exceed any of the SFBAAB
 34 federal *de minimis* thresholds. Accordingly, a general conformity determination is not required as
 35 total direct and indirect emissions would conform to the appropriate SFBAAB SIPs.

36 ***CEQA Conclusion:*** SFNA and SJVAB are classified as nonattainment areas with regard to the ozone
 37 NAAQS and the impact of increases in criteria pollutant emissions above the air basin *de minimis*
 38 thresholds could conflict with or obstruct implementation of the applicable air quality plans. Since
 39 construction emissions in the SFNA and SJVAB would exceed the *de minimis* thresholds for ROG and
 40 NO_x, this impact would be significant.

1 Mitigation Measures AQ-4a and AQ-4b would ensure project emissions would not result in an
2 increase in regional ROG or NO_x in the SJVAB. These measures would therefore ensure total direct
3 and indirect ROG and NO_x emissions generated by the project would conform to the appropriate
4 SJVAB SIPs by offsetting the action's emissions in the same or nearby area to net zero. Accordingly,
5 impacts would be less than significant with mitigation in the SJVAB.

6 Although Mitigation Measures AQ-1a and AQ-1b would reduce NO_x in the SFNA, given the magnitude
7 of NO_x emissions and the limited geographic scope available for offsets (Sacramento County),
8 neither measure could feasibly reduce NO_x emissions to net zero for the purposes of general
9 conformity. This impact would be significant and unavoidable in the SFNA.

10 Emissions generated within the SFBAAB would not exceed the SFBAAB de minimis thresholds and
11 would therefore conform to the appropriate SFBAAB SIPs. No mitigation is required.

12 **Impact AQ-21: Generation of Cumulative Greenhouse Gas Emissions during Construction of** 13 **the Proposed Water Conveyance Facility**

14 **NEPA Effects:** GHG (CO₂, CH₄, N₂O, SF₆, and HFCs) emissions resulting from construction of
15 Alternative 7 are presented in Table 22-128. Emissions with are presented with implementation of
16 environmental commitments (see Appendix 3B, *Environmental Commitments*) and state mandates to
17 reduce GHG emissions. State mandates include the RPS, LCFS, and Pavley. These mandates do not
18 require additional action on the part of DWR, but will contribute to GHG emissions reductions. For
19 example, Pavley and LCFS will improve the fuel efficiency of vehicles and reduce the carbon content
20 of transportation fuels, respectively. Equipment used to construct the project will therefore be
21 cleaner and less GHG intensive than if the state mandates had not been established. Due to the global
22 nature of GHGs, the determination of effects is based on total emissions generated by construction
23 (Table 22-134).

1 **Table 22-134. GHG Emissions from Construction of Alternative 7 (metric tons/year)^a**

Year	Equipment and Vehicles (CO ₂ e)	Electricity (CO ₂ e)	Concrete Batching (CO ₂)	Total CO ₂ e
2016	0	0	428	428
2017	0	0	0	0
2018	12,007	616	53,121	65,745
2019	41,416	3,445	8,344	53,205
2020	71,346	16,547	51,847	139,740
2021	106,134	44,055	102,833	253,022
2022	118,049	61,863	155,860	335,772
2023	143,645	55,070	152,171	350,886
2024	161,511	57,442	182,059	401,013
2025	111,863	38,750	121,570	272,183
2026	85,473	13,834	29,133	128,440
2027	61,317	2,642	42,014	105,973
2028	21,518	70	8,266	29,853
2029	1,300	2	0	1,302
<i>Total</i>	<i>935,579</i>	<i>294,338</i>	<i>907,645</i>	<i>2,137,562</i>

^a Emissions estimates do not account for GHG flux from land disturbance. Surface and subsurface (e.g., tunneling) activities may oxidize peat soils, releasing GHG emissions. However, recent geotechnical surveys indicated that peat is negligible below 80 feet of depth. The tunnel will be placed below this range and the design adjusted if peat soils are discovered. Peat material encountered during surface excavation for non-tunnel work will be covered with top soil to reduce oxidation when needed.

Values may not total correctly due to rounding.

2

3 Table 22-135 summarizes GHG emissions that would be generated in the BAAQMD, SMAQMD,
4 SJVAPCD, and YSAQMD. The table does not include emissions from electricity generation as these
5 emissions would be generated by power plants located throughout the state (see discussion
6 preceding this impact analysis). GHG emissions presented in Table 22-135 are therefore provided
7 for information purposes only.

8 **Table 22-135. GHG Emissions from Construction of Alternative 7 by Air District (metric tons/year)^a**

Year	Equipment and Vehicles (CO ₂ e)	Concrete Batching (CO ₂) ^a	Total CO ₂ e ^b
SMAQMD	399,753	544,587	944,340
YSAQMD	39,089	0	39,089
SJVAPCD	312,492	181,529	494,021
BAAQMD	184,244	181,529	365,773

^a Emissions assigned to each air district based on the number of batching plants located in that air district.

^b Values may not total correctly due to rounding.

9

10 Construction of Alternative 7 would generate a total of 2.1 million metric tons of GHG emissions
11 after implementation of environmental commitments and state mandates. This is equivalent to
12 adding 450,000 typical passenger vehicles to the road during construction (U.S. Environmental
13 Protection Agency 2014e). As discussed in section 22.3.2, *Determination of Effects*, any increase in

emissions above net zero associated with construction of the BDCP water conveyance features would be adverse. Accordingly, this effect would be adverse. Mitigation Measure AQ-21, which would develop a GHG Mitigation Program to reduce construction-related GHG emissions to net zero, is available address this effect.

CEQA Conclusion: Construction of Alternative 7 would generate a total of 2.1 million metric tons of GHG emissions. This is equivalent to adding 450,000 typical passenger vehicles to the road during construction (U.S. Environmental Protection Agency 2014e). As discussed in section 22.3.2, *Determination of Effects*, any increase in emissions above net zero associated with construction of the BDCP water conveyance features would be significant. Mitigation Measure AQ-21 would develop a GHG Mitigation Program to reduce construction-related GHG emissions to net zero. Accordingly, this impact would be less-than-significant with implementation of Mitigation Measure AQ-21.

Mitigation Measure AQ-21: Develop and Implement a GHG Mitigation Program to Reduce Construction Related GHG Emissions to Net Zero (0)

Please see Mitigation Measure AQ-21 under Impact AQ-21 in the discussion of Alternative 1A.

Impact AQ-22: Generation of Cumulative Greenhouse Gas Emissions from Operation and Maintenance of the Proposed Water Conveyance Facility and Increased Pumping

NEPA Effects: Operation of Alternative 7 would generate direct and indirect GHG emissions. Sources of direct emissions include heavy-duty equipment, on road crew trucks, and employee vehicle traffic. Indirect emissions would be generated predominantly by electricity consumption required for pumping as well as, maintenance, lighting, and other activities.

Table 22-136 summarizes long-term operational GHG emissions associated with operations, maintenance, and increased SWP pumping. Emissions were quantified for both ELT and LLT conditions, although activities would take place annually until project decommissioning. Emissions include state mandates to reduce GHG emissions (described in Impact AQ-21) are presented (there are no BDCP specific operational environmental commitments). Total CO_{2e} emissions are compared to both the No Action Alternative (NEPA point of comparison) and Existing Conditions (CEQA baseline). As discussed in Section 22.3.1.2, equipment emissions are assumed to be zero under both the No Action Alternative (NEPA point of comparison) and Existing Conditions (CEQA baseline). The equipment emissions presented in Table 22-136 are therefore representative of project impacts for both the NEPA and CEQA analysis.

Table 22-136. GHG Emissions from Operation, Maintenance, and Increased SWP Pumping, Alternative 7 (metric tons/year)

Condition	Equipment CO _{2e}	Electricity CO _{2e}		Total CO _{2e}	
		NEPA Point of Comparison	CEQA Baseline	NEPA Point of Comparison	CEQA Baseline
ELT	386	-	-110,762	-	-110,376
LLT	379	-21,013	-48,217	-20,634	-47,838

Note: The *NEPA point of comparison* compares total CO_{2e} emissions after implementation of Alternative 7 to the No Action Alternative, whereas the *CEQA baseline* compares total CO_{2e} emissions to Existing Conditions. Negative values represent a net GHG reduction.

1 Table 22-137 summarizes total CO₂e emissions that would be generated in the BAAQMD, SMAQMD,
 2 and SJVAPCD (no operational emissions would be generated in the YSAQMD). The table does not
 3 include emissions from SWP pumping as these emissions would be generated by power plants
 4 located throughout the state (see discussion preceding this impact analysis). GHG emissions
 5 presented in Table 22-137 are therefore provided for information purposes only.

6 **Table 22-137. Equipment CO₂e Emissions from Operation and Maintenance of Alternative 7 by Air**
 7 **District (metric tons/year)**

Air District	ELT	LLT
SMAQMD	331	323
SJVAPCD	25	26
BAAQMD	30	31
Total	286	379

^a Emissions do not include emissions generated by increased SWP pumping.

9 **SWP Operational and Maintenance GHG Emissions Analysis**

10 Alternative 7 would not add any additional net electricity demand to operation of the SWP and
 11 would in fact result in a net reduction in electricity demand (see Table 22-136). Therefore, there will
 12 be no impact on SWP operational emissions.

13 A small amount of additional GHG emissions from equipment would be emitted as a result of the
 14 maintenance of new facilities associated with Alternative 7 (Table 22-136). Emissions from
 15 additional maintenance activities would become part of the overall DWR maintenance program for
 16 the SWP and would be managed under DWR's CAP.

17 The CAP sets forth DWR's plan to manage its activities and operations to achieve its GHG emissions
 18 reduction goals. The CAP commits DWR to monitoring its emissions each year and evaluating its
 19 emissions every five years to determine whether it is on a trajectory to achieve its GHG emissions
 20 reduction goals. If it appears that DWR will not meet the GHG emission reduction goals established
 21 in the plan, DWR may make adjustments to existing emissions reduction measures, devise new
 22 measures to ensure achievement of the goals, or take other action.

23 Consistent with the analysis contained in the CAP and associated Initial Study and Negative
 24 Declaration for the CAP, BDCP Alternative 7 would not adversely affect DWR's ability to achieve the
 25 GHG emissions reduction goals set forth in the CAP. Further, Alternative 7 would not conflict with
 26 any of DWR's specific action GHG emissions reduction measures and implements all applicable
 27 project level GHG emissions reduction measures as set forth in the CAP. BDCP Alternative 7 is
 28 therefore consistent with the analysis performed in the CAP. There would be no adverse effect.

29 **CEQA Conclusion:** SWP GHG emissions currently are below 1990 levels and achievement of the
 30 goals of the CAP means that total DWR GHG emissions will be reduced to 50% of 1990 levels by
 31 2020 and to 80% of 1990 levels by 2050. The implementation of BDCP Alternative 7 would not
 32 affect DWR's established emissions reduction goals or baseline (1990) emissions and therefore
 33 would not result in a change in total DWR emissions that would be considered significant. Prior
 34 adoption of the CAP by DWR already provides a commitment on the part of DWR to make all
 35 necessary modifications to DWR's REPP (as described above) or any other GHG emission reduction
 36 measure in the CAP that are necessary to achieve DWR's GHG emissions reduction goals. Therefore

1 no amendment to the approved CAP is necessary to ensure the occurrence of the additional GHG
 2 emissions reduction activities needed to account for BDCP-related operational or maintenance
 3 emissions. The effect of BDCP Alternative 7 with respect to GHG emissions is less than cumulatively
 4 considerable and therefore less than significant. No mitigation is required.

5 **Impact AQ-23: Generation of Cumulative Greenhouse Gas Emissions from Increased CVP**
 6 **Pumping as a Result of Implementation of CM1**

7 **NEPA Effects:** As previously discussed, DWR's CAP cannot be used to evaluate environmental
 8 impacts associated with increased CVP pumping, as emissions associated with CVP are not under
 9 DWR's control and are not included in the CAP. Accordingly, GHG emissions resulting from increased
 10 CVP energy use are evaluated separately from GHG emissions generated as a result of SWP energy
 11 use.

12 Under Alternative 7, operation of the CVP yields the generation of clean, GHG emissions-free,
 13 hydroelectric energy. This electricity is sold into the California electricity market or directly to
 14 energy users. Analysis of the existing and future no action condition indicates that the CVP generates
 15 and will continue to generate all of the electricity needed to operate the CVP system and
 16 approximately 3,500 GWh of excess hydroelectric energy that would be sold to energy users
 17 throughout California.

18 Implementation of Alternative 7 is neither expected to require additional electricity over the No
 19 Action Alternative nor reduce the amount of excess CVP generation available for sale from the CVP
 20 to electricity users. The CVP is operated using energy generated at CVP hydroelectric facilities and
 21 therefore results in no GHG emissions. Rather, implementation of Alternative 7 would reduce GHG
 22 emissions by 24,589 to 31,644 metric tons of CO₂e, relative to the No Action Alternative (depending
 23 on whether the RPS is assumed in the emissions calculations). Accordingly, there would be no
 24 adverse effect.

25 **CEQA Conclusion:** Implementation of Alternative 7 is neither expected to require additional
 26 electricity over Existing Conditions nor reduce the amount of excess CVP generation available for
 27 sale from the CVP to electricity users. All power supplied to CVP facilities would continue to be
 28 supplied by GHG emissions-free hydroelectricity and there would be no increase in GHG emissions
 29 over Existing Conditions as a result of CVP operations. The impact would be less than significant and
 30 no mitigation is required.

31 **Impact AQ-24: Generation of Regional Criteria Pollutants from Implementation of CM2–CM11**

32 **NEPA Effects:** Table 22-29 summarizes potential construction and operational emissions that may
 33 be generated by implementation of CM2–CM11. See the discussion of Impact AQ-24 under
 34 Alternative 1A.

35 Criteria pollutants from restoration and enhancement actions could exceed applicable general
 36 conformity *de minimis* levels and applicable local thresholds. The effect would vary according to the
 37 equipment used in construction of a specific conservation measure, the location, the timing of the
 38 actions called for in the conservation measure, and the air quality conditions at the time of
 39 implementation; these effects would be evaluated and identified in the subsequent project-level
 40 environmental analysis conducted for the CM2–CM11 restoration and enhancement actions. The
 41 effect of increases in emissions during implementation of CM2–CM11 in excess of applicable general
 42 conformity *de minimis* levels and air district regional thresholds (Table 22-8) could violate air basin

1 SIPs and worsen existing air quality conditions. Mitigation Measure AQ-24 would be available to
2 reduce this effect, but emissions would still be adverse.

3 **CEQA Conclusion:** Construction and operational emissions associated with the restoration and
4 enhancement actions would result in a significant impact if the incremental difference, or increase,
5 relative to Existing Conditions exceeds the applicable local air district thresholds shown in Table 22-
6 8; these effects are expected to be further evaluated and identified in the subsequent project-level
7 environmental analysis conducted for the CM2–CM11 restoration and enhancement actions.
8 Mitigation Measure AQ-24 would be available to reduce this effect, but may not be sufficient to
9 reduce emissions below applicable air quality management district thresholds (see Table 22-8).
10 Consequently, this impact would be significant and unavoidable.

11 **Mitigation Measure AQ-24: Develop an Air Quality Mitigation Plan (AQMP) to Ensure Air**
12 **District Regulations and Recommended Mitigation are Incorporated into Future**
13 **Conservation Measures and Associated Project Activities**

14 Please see Mitigation Measure AQ-24 under Impact AQ-24 in the discussion of Alternative 1A.

15 **Impact AQ-25: Exposure of Sensitive Receptors to Health Hazards from Localized Particulate**
16 **Matter, Carbon Monoxide, and Diesel Particulate Matter from Implementation of CM2–CM11**

17 **NEPA Effects:** The potential for Alternative 7 to expose sensitive receptors increased health hazards
18 from localized PM, CO, and DPM would be similar to Alternative 1A. Activities shown in Table 22-29
19 with the greatest potential to have short or long-term air quality impacts are also anticipated to
20 have the greatest potential to expose receptors to substantial pollutant concentrations. The effect
21 would vary according to the equipment used, the location and timing of the actions called for in the
22 conservation measure, the meteorological and air quality conditions at the time of implementation,
23 and the location of receptors relative to the emission source. Potential health effects would be
24 evaluated and identified in the subsequent project-level environmental analysis conducted for the
25 CM2–CM11 restoration and enhancement actions.

26 The effect of increases in PM, CO, or DPM (cancer and non-cancer-risk) in excess of applicable air
27 district thresholds (Table 22-8) at receptor locations could result in adverse health impacts.
28 Mitigation Measures AQ-24 and AQ-25 would be available to reduce this effect.

29 **CEQA Conclusion:** Construction and operational emissions associated with the restoration and
30 enhancement actions under Alternative 7 would result in a significant impact if PM, CO, or DPM
31 (cancer and non-cancer-risk) concentrations at receptor locations exceed the applicable local air
32 district thresholds shown in Table 22-8; these effects are expected to be further evaluated and
33 identified in the subsequent project-level environmental analysis conducted for the CM2–CM11
34 restoration and enhancement actions. Mitigation Measures AQ-24 and AQ-25 would ensure localized
35 concentrations at receptor locations would be below applicable air quality management district
36 thresholds (see Table 22-8). Consequently, this impact would be less than significant.

37 **Mitigation Measure AQ-24: Develop an Air Quality Mitigation Plan (AQMP) to Ensure Air**
38 **District Regulations and Recommended Mitigation are Incorporated into Future**
39 **Conservation Measures and Associated Project Activities**

40 Please see Mitigation Measure AQ-24 under Impact AQ-24 in the discussion of Alternative 1A.

1 **Mitigation Measure AQ-25: Prepare a Project-Level Health Risk Assessment to Reduce**
 2 **Potential Health Risks from Exposure to Localized DPM and PM Concentrations**

3 Please see Mitigation Measure AQ-25 under Impact AQ-25 in the discussion of Alternative 1A.

4 **Impact AQ-26: Creation of Potential Odors Affecting a Substantial Number of People from**
 5 **Implementation of CM2–CM11**

6 **NEPA Effects:** The potential for Alternative 7 to expose sensitive receptors increased odors would
 7 be similar to Alternative 1A. Accordingly, construction activities associated with CM2-CM11 are not
 8 anticipated to result in nuisance odors. Similarly, while restored land uses associated with the
 9 program have the potential to generate odors from natural processes, the emissions would be
 10 similar in origin and magnitude to the existing land use types in the restored area (e.g., managed
 11 wetlands). Moreover, specific odor effects would be evaluated and identified in the subsequent
 12 project-level environmental analysis conducted for the CM2–CM11 restoration and enhancement
 13 actions. Accordingly, odor-related effects associated with CM2–CM11 would not be adverse.

14 **CEQA Conclusion:** Alternative 7 would not result in the addition of major odor producing facilities.
 15 Diesel emissions during construction could generate temporary odors, but these would quickly
 16 dissipate and cease once construction is completed. Increases in wetland, tidal, and upland habitats
 17 may increase the potential for odors from natural processes. However, the origin and magnitude of
 18 odors would be similar to the existing land use types in the restored area (e.g., managed wetlands).
 19 Moreover, specific odor impacts would be evaluated and identified in the subsequent project-level
 20 environmental analysis conducted for the CM2–CM11 restoration and enhancement actions.
 21 Accordingly, the impact of exposure of sensitive receptors to potential odors would be less than
 22 significant. No mitigation is required.

23 **Impact AQ-27: Generation of Cumulative Greenhouse Gas Emissions from Implementation of**
 24 **CM2–CM11**

25 **NEPA Effects:** CM2–CM11 implemented under Alternative 7 would result in local GHG emissions
 26 from construction equipment and vehicle exhaust, similar to Alternative 1A. Restoration activities
 27 with the greatest potential for emissions include those that break ground and require use of
 28 earthmoving equipment. The type of restoration action and related construction equipment use are
 29 shown in Table 22-29. Implementing CM2–CM11 would also affect long-term sequestration rates
 30 through land use changes, such as conversion of agricultural land to wetlands, inundation of peat
 31 soils, drainage of peat soils, and removal or planting of carbon-sequestering plants.

32 Without additional information on site-specific characteristics associated with each of the
 33 restoration components, a complete assessment of GHG flux from CM2–CM11 is currently not
 34 possible. The effect of carbon sequestration and CH₄ generation would vary by land use type, season,
 35 and chemical and biological characteristics; these effects would be evaluated and identified in the
 36 subsequent project-level environmental analysis conducted for the CM2–CM11 restoration and
 37 enhancement actions. Mitigation Measures AQ-24 and AQ-27 would be available to reduce this
 38 effect. However, due to the potential for increases in GHG emissions from construction and land use
 39 change, this effect would be adverse.

40 **CEQA Conclusion:** The restoration and enhancement actions under Alternative 7 could result in a
 41 significant impact if activities are inconsistent with applicable GHG reduction plans, do not
 42 contribute to a lower carbon future, or generate excessive emissions, relative to other projects

1 throughout the state. These effects are expected to be further evaluated and identified in the
 2 subsequent project-level environmental analysis conducted for the CM2–CM11 restoration and
 3 enhancement actions. Mitigation Measures AQ-24 and AQ-27 would be available to reduce this
 4 impact, but may not be sufficient to reduce to a less-than-significant level. Consequently, this impact
 5 would be significant and unavoidable.

6 **Mitigation Measure AQ-24: Develop an Air Quality Mitigation Plan (AQMP) to Ensure Air**
 7 **District Regulations and Recommended Mitigation are Incorporated into Future**
 8 **Conservation Measures and Associated Project Activities**

9 Please see Mitigation Measure AQ-24 under Impact AQ-24 in the discussion of Alternative 1A.

10 **Mitigation Measure AQ-27: Prepare a Land Use Sequestration Analysis to Quantify and**
 11 **Mitigate (as Needed) GHG Flux Associated with Conservation Measures and Associated**
 12 **Project Activities**

13 Please see Mitigation Measure AQ-27 under Impact AQ-27 in the discussion of Alternative 1A.

14 **22.3.3.15 Alternative 8—Dual Conveyance with Pipeline/Tunnel, Intakes 2,**
 15 **3, and 5, and Increased Delta Outflow (9,000 cfs; Operational**
 16 **Scenario F)**

17 For the purposes of this analysis, it was assumed that Intakes 2, 3, and 5 (on the east bank of the
 18 Sacramento River) would be constructed under Alternative 8. Under this alternative, an
 19 intermediate forebay would also be constructed, and the conveyance facility would be a buried
 20 pipeline and tunnels (Figures 3-2 and 3-11 in Chapter 3, *Description of Alternatives*).

21 Construction and operation of Alternative 8 would require the use of electricity, which would be
 22 supplied by the California electrical grid. Power plants located throughout the state supply the grid
 23 with power, which will be distributed to the Study area to meet project demand. Power supplied by
 24 statewide power plants will generate criteria pollutants. Because these power plants are located
 25 throughout the state, criteria pollutant emissions associated with Alternative 8 electricity demand
 26 cannot be ascribed to a specific air basin or air district within the Study area. Criteria pollutant
 27 emissions from electricity consumption are therefore provided for informational purposes only and
 28 are not included in the impact conclusion.

29 Construction and operational activities required for Alternative 8 was assumed to equal activity
 30 required for Alternative 7. Construction and operational emissions generated by Alternative 7
 31 would therefore be representative of emissions generated by Alternative 8. Refer to Table 22-131
 32 for a summary of criteria pollutants during construction (years 2016 through 2029) and Table 22-
 33 132 for a summary of criteria pollutants during long-term operation. While operations and
 34 maintenance activities among Alternatives 7 and 8 would be the same, emissions from electricity
 35 consumption would differ and are provided in Table 22-138. Negative values represent an emissions
 36 benefit, relative to the No Action Alternative or Existing Conditions.

1 **Table 22-138. Criteria Pollutant Emissions from Electricity Consumption: Net Project Operations,**
 2 **Alternative 8 (tons/year)**

Year	Analysis	ROG	CO	NO _x	PM10	PM2.5 ^c	SO ₂
ELT	CEQA	-3	-29	-400	-34	-34	-169
LLT	NEPA	-2	-21	-287	-24	-24	-121
LLT	CEQA	-3	-33	-453	-38	-38	-191

NEPA = Compares criteria pollutant emissions after implementation of Alternative 8 to the No Action Alternative.

CEQA = Compares criteria pollutant emissions after implementation of Alternative 8 to Existing Conditions.

^a Emissions assume implementation of RPS (see Appendix 22A, *Air Quality Analysis Methodology*). Power plants that generate electricity for the proposed project would be subject to local air district permitting requirements, including standards to implement BACT to reduce criteria pollutant emissions.

^b Because GHG emissions are cumulative (see Section 22.3.2.1) and not evaluated at the local air basin or air district level, they are discussed in Impacts AQ-21 and AQ-22. The GHG analysis for SWP power utilizes actual and forecasted GHG emissions rates for the SWP system, which differs slightly from the above analysis. Statewide grid average emission factors were utilized for the above analysis as criteria pollutant emission factors for SWP were unavailable. Please also note that the above analysis does not account for additional renewable energy that will be procured through modifications to DWR's REPP (see Impact AQ-22). Accordingly, the emissions results presented above represent a conservative assessment of potential criteria pollutant emissions.

^c Emission factors for PM2.5 are currently unavailable. Consequently, PM2.5 emissions were assumed to equal PM10 emissions. Because PM2.5 represents a fraction of PM10, this approach represents a conservative assessment of PM2.5 emissions from electricity consumption.

3
 4 **Impact AQ-1: Generation of Criteria Pollutants in Excess of the SMAQMD Regional Thresholds**
 5 **during Construction of the Proposed Water Conveyance Facility**

6 **NEPA Effects:** Construction activity required for Alternative 8 was assumed to equal activity
 7 required for Alternative 7. Emissions generated by Alternative 7 would therefore be representative
 8 of emissions generated by Alternative 8. As shown in Table 22-131, emissions would exceed
 9 SMAQMD's daily NO_x threshold, even with implementation of environmental commitments. Since
 10 NO_x is a precursor to ozone and PM, exceedances of SMAQMD's daily NO_x threshold could impact
 11 both regional ozone and PM formation, which could worsen regional air quality and air basin
 12 attainment of the NAAQS and CAAQS.

13 While equipment could operate at any work area identified for this alternative, the highest level of
 14 NO_x and fugitive dust emissions in the SMAQMD are expected to occur at those sites where the
 15 duration and intensity of construction activities would be greatest. This includes all intake and
 16 intake pumping plant sites along the east bank of the Sacramento River, as well as the intermediate
 17 forebay (and pumping plant) site west of South Stone Lake and east of the Sacramento River. See the
 18 discussion of Impact AQ-1 under Alternative 7.

19 Environmental commitments will reduce construction-related emissions; however, as shown in
 20 Table 22-131, NO_x emissions would still exceed SMAQMD's threshold identified in Table 22-8 and
 21 would result in an adverse effect to air quality. Mitigation Measures AQ-1a and AQ-1b would be
 22 available to reduce NO_x emissions, and would thus address regional effects related to secondary
 23 ozone and PM formation.

1 **CEQA Conclusion:** NO_x emissions generated during construction would exceed SMAQMD threshold
 2 identified in Table 22-8. Since NO_x is a precursor to ozone and PM, exceedances of SMAQMD's daily
 3 NO_x threshold could impact both regional ozone and PM formation. SMAQMD's regional emissions
 4 thresholds (Table 22-8) have been adopted to ensure projects do not hinder attainment of the
 5 CAAQS or NAAQS. The impact of generating NO_x emissions in excess of local air district thresholds
 6 would therefore violate applicable air quality standards in the Study area and could contribute to or
 7 worsen an existing air quality conditions. This would be a significant impact. Mitigation Measures
 8 AQ-1a and AQ-1b would be available to reduce NO_x emissions to a less-than-significant level by
 9 offsetting emissions to quantities below SMAQMD CEQA thresholds (see Table 22-8).

10 **Mitigation Measure AQ-1a: Mitigate and Offset Construction-Generated Criteria Pollutant**
 11 **Emissions within the SFNA to Net Zero (0) for Emissions in Excess of General Conformity**
 12 ***De Minimis* Thresholds (Where Applicable) and to Quantities below Applicable CEQA**
 13 **Thresholds for Other Pollutants**

14 Please see Mitigation Measure AQ-1a under Impact AQ-1 in the discussion of Alternative 1A.

15 **Mitigation Measure AQ-1b: Develop an Alternative or Complementary Offsite Mitigation**
 16 **Program to Mitigate and Offset Construction-Generated Criteria Pollutant Emissions**
 17 **within the SFNA to Net Zero (0) for Emissions in Excess of General Conformity *De Minimis***
 18 **Thresholds (Where Applicable) and to Quantities below Applicable CEQA Thresholds for**
 19 **Other Pollutants**

20 Please see Mitigation Measure AQ-1b under Impact AQ-1 in the discussion of Alternative 1A.

21 **Impact AQ-2: Generation of Criteria Pollutants in Excess of the YSAQMD Regional Thresholds**
 22 **during Construction of the Proposed Water Conveyance Facility**

23 **NEPA Effects:** Construction activity required for Alternative 8 within the YSAQMD was assumed to
 24 equal activity required for Alternative 7. Emissions generated by Alternative 7 would therefore be
 25 representative of emissions generated by Alternative 8. As shown in Table 22-131, emissions would
 26 exceed YSAQMD's NO_x and PM₁₀ thresholds, even with implementation of environmental
 27 commitments (see Appendix 3B, *Environmental Commitments*).

28 Since NO_x is a precursor to ozone and PM, exceedances of SMAQMD's daily NO_x threshold could
 29 impact both regional ozone and PM formation, which could worsen regional air quality and air basin
 30 attainment of the NAAQS and CAAQS. Similarly, exceedances of YSAQMD's PM₁₀ threshold could
 31 impede attainment of the NAAQS and CAAQS for PM₁₀. All emissions generated within YSAQMD are
 32 a result of haul truck movement for equipment and material delivery.

33 Environmental commitments outlined in Appendix 3B, *Environmental Commitments*, will reduce
 34 construction-related emissions; however, as shown in Table 22-131, NO_x and PM₁₀ emissions
 35 would still exceed the applicable YSAQMD thresholds identified in Table 22-8 and result in an
 36 adverse regional effect to air quality. Mitigation Measures AQ-1a and AQ-1b are available to reduce
 37 NO_x and PM₁₀ emissions, and would thus address regional effects related to secondary ozone and
 38 PM formation.

39 **CEQA Conclusion:** Emissions of NO_x and PM₁₀ generated during construction would exceed
 40 YSAQMD's regional thresholds identified in Table 22-8. Since NO_x is a precursor to ozone and NO_x is
 41 a precursor to PM, exceedances of YSAQMD's NO_x threshold could impact both regional ozone and

1 PM formation, which could worsen regional air quality and air basin attainment of the NAAQS and
 2 CAAQS. Similarly, exceedances of YSAQMD's PM10 threshold could impede attainment of the NAAQS
 3 and CAAQS for PM10. YSAQMD's regional emissions thresholds (Table 22-8) have been adopted to
 4 ensure projects do not hinder attainment of the CAAQS or NAAQS. The impact of generating NO_x and
 5 PM10 in excess of local air district regional thresholds would therefore violate applicable air quality
 6 standards in the study area and could contribute to or worsen an existing air quality conditions. This
 7 would be a significant impact. Mitigation Measures AQ-1a and AQ-1b would be available to reduce
 8 NO_x and PM10 emissions to a less-than-significant level by offsetting emissions to quantities below
 9 YSAQMD CEQA thresholds (see Table 22-8).

10 **Mitigation Measure AQ-1a: Mitigate and Offset Construction-Generated Criteria Pollutant**
 11 **Emissions within the SFNA to Net Zero (0) for Emissions in Excess of General Conformity**
 12 ***De Minimis* Thresholds (Where Applicable) and to Quantities below Applicable CEQA**
 13 **Thresholds for Other Pollutants**

14 Please see Mitigation Measure AQ-1a under Impact AQ-1 in the discussion of Alternative 1A.

15 **Mitigation Measure AQ-1b: Develop an Alternative or Complementary Offsite Mitigation**
 16 **Program to Mitigate and Offset Construction-Generated Criteria Pollutant Emissions**
 17 **within the SFNA to Net Zero (0) for Emissions in Excess of General Conformity *De Minimis***
 18 **Thresholds (Where Applicable) and to Quantities below Applicable CEQA Thresholds for**
 19 **Other Pollutants**

20 Please see Mitigation Measure AQ-1b under Impact AQ-1 in the discussion of Alternative 1A.

21 **Impact AQ-3: Generation of Criteria Pollutants in Excess of the BAAQMD Regional Thresholds**
 22 **during Construction of the Proposed Water Conveyance Facility**

23 ***NEPA Effects:*** Construction activity required for Alternative 8 was assumed to equal activity
 24 required for Alternative 7. Emissions generated by Alternative 7 would therefore be representative
 25 of emissions generated by Alternative 8. As shown in Table 22-131, construction emissions would
 26 exceed BAAQMD's daily ROG and NO_x thresholds, even with implementation of environmental
 27 commitments. All other pollutants would be below air district thresholds and therefore would not
 28 result in an adverse air quality effect.

29 Since ROG and NO_x are precursors to ozone and NO_x is a precursor to PM, exceedances of BAAQMD's
 30 ROG and NO_x thresholds could impact both regional ozone and PM formation, which could worsen
 31 regional air quality and air basin attainment of the NAAQS and CAAQS.

32 While equipment could operate at any work area identified for this alternative, the highest level of
 33 ROG and NO_x emissions in the BAAQMD are expected to occur at those sites where the duration and
 34 intensity of construction activities would be greatest, including the site of the Byron Tract Forebay
 35 adjacent to and south of Clifton Court Forebay.

36 Environmental commitments outlined in Appendix 3B, *Environmental Commitments*, will reduce
 37 construction-related emissions; however, as shown in Table 22-131, ROG and NO_x emissions would
 38 still exceed BAAQMD's thresholds identified in Table 22-8 and would result in an adverse effect to
 39 air quality. Mitigation Measures AQ-3a and AQ-3b are available to reduce ROG and NO_x emissions,
 40 and would thus address regional effects related to secondary ozone and PM formation.

1 **CEQA Conclusion:** Emissions of ROG and NO_x generated during construction would exceed BAAQMD
 2 thresholds identified in Table 22-8. Since ROG and NO_x are precursors to ozone and NO_x is a
 3 precursor to PM, exceedances of BAAQMD's ROG and NO_x thresholds could impact both regional
 4 ozone and PM formation. BAAQMD's regional emissions thresholds (Table 22-8) have been adopted
 5 to ensure projects do not hinder attainment of the CAAQS or NAAQS. The impact of generating
 6 emissions in excess of local air district thresholds would therefore violate applicable air quality
 7 standards in the Study area and could contribute to or worsen an existing air quality conditions.
 8 This would be a significant impact. Mitigation Measures AQ-3a and AQ-3b would be available to
 9 reduce ROG and NO_x emissions to a less-than-significant level by offsetting emissions to quantities
 10 below BAAQMD CEQA thresholds (see Table 22-8).

11 **Mitigation Measure AQ-3a: Mitigate and Offset Construction-Generated Criteria Pollutant**
 12 **Emissions within BAAQMD/SFBAAB to Net Zero (0) for Emissions in Excess of General**
 13 **Conformity *De Minimis* Thresholds (Where Applicable) and to Quantities below**
 14 **Applicable BAAQMD CEQA Thresholds for Other Pollutants**

15 Please see Mitigation Measure AQ-3a under Impact AQ-3 in the discussion of Alternative 1A.

16 **Mitigation Measure AQ-3b: Develop an Alternative or Complementary Offsite Mitigation**
 17 **Program to Mitigate and Offset Construction-Generated Criteria Pollutant Emissions**
 18 **within the BAAQMD/SFBAAB to Net Zero (0) for Emissions in Excess of General**
 19 **Conformity *De Minimis* Thresholds (Where Applicable) and to Quantities below**
 20 **Applicable BAAQMD CEQA Thresholds for Other Pollutants**

21 Please see Mitigation Measure AQ-3b under Impact AQ-3 in the discussion of Alternative 1A.

22 **Impact AQ-4: Generation of Criteria Pollutants in Excess of the SJVAPCD Regional Thresholds**
 23 **during Construction of the Proposed Water Conveyance Facility**

24 **NEPA Effects:** Construction activity required for Alternative 8 was assumed to equal activity
 25 required for Alternative 7. Emissions generated by Alternative 7 would therefore be representative
 26 of emissions generated by Alternative 8. As shown in Table 22-131, construction emissions would
 27 exceed SJVAPCD's annual ROG, NO_x, and PM₁₀ thresholds, even with implementation of
 28 environmental commitments. All other pollutants would be below air district thresholds and
 29 therefore would not result in an adverse air quality effect.

30 Since ROG and NO_x are precursors to ozone and NO_x is a precursor to PM, exceedances of SJVAPCD's
 31 ROG and NO_x thresholds could impact both regional ozone and PM formation, which could worsen
 32 regional air quality and air basin attainment of the NAAQS and CAAQS. Similarly, exceedances of
 33 SJVAPCD's PM₁₀ threshold could impede attainment of the NAAQS and CAAQS for PM₁₀.

34 While equipment could operate at any work area identified for this alternative, the highest level of
 35 ROG, NO_x, and PM₁₀ emissions in the SJVAPCD is expected to occur at those sites where the
 36 duration and intensity of construction activities would be greatest. This includes all temporary and
 37 permanent utility sites, as well as all construction sites along the pipeline/tunnel conveyance
 38 alignment. For a map of the proposed tunnel alignment, see Mapbook Figure M3-1. See the
 39 discussion of Impact AQ-4 under Alternative 7.

40 Environmental commitments outlined in Appendix 3B, *Environmental Commitments*, will reduce
 41 construction-related emissions; however, as shown in Table 22-131, ROG, NO_x, and PM₁₀ emissions

1 would still exceed SJVAPCD's thresholds identified in Table 22-8 and would result in an adverse
 2 effect to air quality. Mitigation Measures AQ-4a and AQ-4b are available to reduce ROG, NO_x, and
 3 PM10 emissions, and would thus address regional effects related to secondary ozone and PM
 4 formation.

5 **CEQA Conclusion:** Emissions of ROG, NO_x, and PM10 generated during construction would exceed
 6 SJVAPCD's annual significance threshold identified in Table 22-8. Since ROG and NO_x are precursors
 7 to ozone and NO_x is a precursor to PM, exceedances of SJVAPCD's ROG and NO_x thresholds could
 8 impact both regional ozone and PM formation, which could worsen regional air quality and air basin
 9 attainment of the NAAQS and CAAQS. Similarly, exceedances of SJVAPCD's PM10 threshold could
 10 impede attainment of the NAAQS and CAAQS for PM10. SJVAPCD's regional emissions thresholds
 11 (Table 22-8) have been adopted to ensure projects do not hinder attainment of the CAAQS or
 12 NAAQS. The impact of generating ROG, NO_x, and PM10 emissions in excess of local air district
 13 thresholds would therefore violate applicable air quality standards in the Study area and could
 14 contribute to or worsen an existing air quality conditions. This would be a significant impact.
 15 Mitigation Measures AQ-4a and AQ-4b would be available to reduce ROG, NO_x, and PM10 emissions
 16 to a less-than-significant level by offsetting emissions to quantities below SJVAPCD CEQA thresholds
 17 (see Table 22-8).

18 **Mitigation Measure AQ-4a: Mitigate and Offset Construction-Generated Criteria Pollutant**
 19 **Emissions within SJVAPCD/SJVAB to Net Zero (0) for Emissions in Excess of General**
 20 **Conformity *De Minimis* Thresholds (Where Applicable) and to Quantities below**
 21 **Applicable SJVAPCD CEQA Thresholds for Other Pollutants**

22 Please see Mitigation Measure AQ-4a under Impact AQ-4 in the discussion of Alternative 1A.

23 **Mitigation Measure AQ-4b: Develop an Alternative or Complementary Offsite Mitigation**
 24 **Program to Mitigate and Offset Construction-Generated Criteria Pollutant Emissions**
 25 **within the SJVAPCD/SJVAB to Net Zero (0) for Emissions in Excess of General Conformity**
 26 ***De Minimis* Thresholds (Where Applicable) and to Quantities below Applicable SJVAPCD**
 27 **CEQA Thresholds for Other Pollutants**

28 Please see Mitigation Measure AQ-4b under Impact AQ-4 in the discussion of Alternative 1A.

29 **Impact AQ-5: Generation of Criteria Pollutants in Excess of the SMAQMD Regional Thresholds**
 30 **from Operation and Maintenance of the Proposed Water Conveyance Facility**

31 **NEPA Effects:** Operations and maintenance activities in SMAQMD required for Alternative 8 were
 32 assumed to equal activities required for Alternative 7. Emissions generated by Alternative 7 would
 33 therefore be representative of emissions generated by Alternative 8. As shown in Table 22-132,
 34 emissions would not exceed SMAQMD's regional thresholds of significance and there would be no
 35 adverse effect. See the discussion of Impact AQ-5 under Alternative 7.

36 **CEQA Conclusion:** Emissions generated during operation and maintenance activities would not
 37 exceed SMAQMD regional thresholds for criteria pollutants. SMAQMD's regional emissions
 38 thresholds (Table 22-8) have been adopted to ensure projects do not hinder attainment of the
 39 CAAQS or NAAQS. The impact of generating emissions in excess of local air district would therefore
 40 violate applicable air quality standards in the Study area and could contribute to or worsen an
 41 existing air quality conditions. Because project operations would not exceed SMAQMD regional
 42 thresholds, the impact would be less than significant. No mitigation is required.

1 **Impact AQ-6: Generation of Criteria Pollutants in Excess of the YSAQMD Regional Thresholds**
 2 **from Operation and Maintenance of the Proposed Water Conveyance Facility**

3 *NEPA Effects:* Alternative 8 would not construct any permanent features in the YSAQMD that would
 4 require routine operations and maintenance. No operational emissions would be generated in the
 5 YSAQMD. Consequently, operation of Alternative 8 would neither exceed the YSAQMD thresholds of
 6 significance nor result in an adverse effect on air quality.

7 *CEQA Conclusion:* No operational or maintenance emissions generated by the alternative would
 8 occur in YSAQMD and, therefore, YSAQMD's regional thresholds would not be exceeded (see Table
 9 22-8). This impact would be less than significant. No mitigation is required.

10 **Impact AQ-7: Generation of Criteria Pollutants in Excess of the BAAQMD Regional Thresholds**
 11 **from Operation and Maintenance of the Proposed Water Conveyance Facility**

12 *NEPA Effects:* Operations and maintenance activities in BAAQMD required for Alternative 8 were
 13 assumed to equal activities required for Alternative 7. Emissions generated by Alternative 7 would
 14 therefore be representative of emissions generated by Alternative 8. As shown in Table 22-132,
 15 emissions would not exceed BAAQMD's regional thresholds of significance and there would be no
 16 adverse effect. See the discussion of Impact AQ-7 under Alternative 7.

17 *CEQA Conclusion:* Emissions generated during operation and maintenance activities would not
 18 exceed BAAQMD regional thresholds for criteria pollutants. BAAQMD's regional emissions
 19 thresholds (Table 22-8) have been adopted to ensure projects do not hinder attainment of the
 20 CAAQS or NAAQS. The impact of generating emissions in excess of local air district thresholds would
 21 violate applicable air quality standards in the Study area and could contribute to or worsen an
 22 existing air quality conditions. Because project operations would not exceed BAAQMD regional
 23 thresholds, the impact would be less than significant. No mitigation is required.

24 **Impact AQ-8: Generation of Criteria Pollutants in Excess of the SJVAPCD Regional Thresholds**
 25 **from Operation and Maintenance of the Proposed Water Conveyance Facility**

26 *NEPA Effects:* Operations and maintenance activities in SJVAPCD required for Alternative 8 were
 27 assumed to equal activities required for Alternative 7. Emissions generated by Alternative 7 would
 28 therefore be representative of emissions generated by Alternative 8. As shown in Table 22-132
 29 emissions would not exceed SJVAPCD's regional thresholds of significance and there would be no
 30 adverse effect. See the discussion of Impact AQ-8 under Alternative 7.

31 *CEQA Conclusion:* Emissions generated during operation and maintenance activities would not
 32 exceed SJVAPCD's regional thresholds of significance. SJVAPCD's regional emissions thresholds
 33 (Table 22-8) have been adopted to ensure projects do not hinder attainment of the CAAQS. The
 34 impact of generating emissions in excess of local air district thresholds would violate applicable air
 35 quality standards in the Study area and could contribute to or worsen an existing air quality
 36 conditions. Because project operations would not exceed SJVAPCD regional thresholds, the impact
 37 would be less than significant. No mitigation is required.

38 **Impact AQ-9: Exposure of Sensitive Receptors to Health Hazards from Localized Particulate**
 39 **Matter in Excess of SMAQMD's Health-Based Concentration Thresholds**

40 *NEPA Effects:* Alternative 8 is similar to Alternative 4 and involves the development of two less
 41 intakes (approximately 40% volumetric reduction) as compared to Alternative 1A. As such, the

1 emissions generated by construction of Alternative 8 would be lower than Alternative 1A due to less
 2 construction activities. Localized health risk impacts resulting from emissions from Intakes 1 and 4
 3 would be less or not occur due to absence in the development of these project features. Based on the
 4 emissions inventory conducted for the air quality analysis, development of Alternative 8 would
 5 result in 22% less PM10 and PM2.5 emissions as compared with Alternative 1A.

6 All annual PM10 and PM2.5 concentrations were found to be less than SMAQMD's annual thresholds
 7 for Alternative 1A. Because Alternative 8 would require less construction activity and generate
 8 fewer emissions than Alternative 1A, annual PM10 and PM2.5 concentrations from the development
 9 of Alternative 8 would also be less than the respective SMAQMD annual thresholds. However, as
 10 shown in Table 22-14, the maximum predicted 24-hour PM10 concentration for Alternative 1A
 11 would exceed SMAQMD's threshold of 2.5 µg/m³. The modeled exceedances occur at 225 receptor
 12 locations near intakes and intake work areas. Because Alternative 8 would not involve the
 13 development of Intakes 1 and 4, emissions contributions from these intakes would not occur, but at
 14 fewer receptor locations than Alternative 1A. It is anticipated that Alternative 8 would still result in
 15 24-hour PM10 exceedances. Accordingly, this alternative would expose a sensitive receptor to
 16 adverse levels of localized particulate matter concentrations. Mitigation Measure AQ-9 is available to
 17 address this effect.

18 **CEQA Conclusion:** Respirable particulates pose a human health hazard by bypassing the defenses
 19 within the mucous ciliary system and entering deep lung tissue. Construction of Alternative 8 would
 20 result in the short-term exposure of receptors to PM10 concentrations that exceed SMAQMD
 21 threshold. This would be a significant impact. Mitigation Measure AQ-9 outlines a tiered strategy to
 22 reduce PM10 concentrations and public exposure to a less-than-significant level.

23 **Mitigation Measure AQ-9: Implement Measures to Reduce Re-Entrained Road Dust and**
 24 **Receptor Exposure to PM2.5 and PM10**

25 Please see Mitigation Measure AQ-9 under Impact AQ-9 in the discussion of Alternative 1A.

26 **Impact AQ-10: Exposure of Sensitive Receptors to Health Hazards from Localized Particulate**
 27 **Matter in Excess of YSAQMD's Health-Based Concentration Thresholds**

28 **NEPA Effects:** Table 22-15 under Alternative 1A shows that the maximum predicted PM2.5 and
 29 PM10 concentrations are less than YSAQMD's adopted thresholds. Because Alternative 8 would
 30 require less construction activity and generate fewer emissions than Alternative 1A, annual PM10
 31 and PM2.5 concentrations from the development of Alternative 8 would also be less than the
 32 respective YSAQMD annual thresholds. The project would also implement all air district-
 33 recommended onsite fugitive dust controls, such as regular watering. Accordingly, this alternative
 34 would not expose sensitive receptors to adverse levels of localized particulate matter
 35 concentrations.

36 **CEQA Conclusion:** Respirable particulates pose a human health hazard by bypassing the defenses
 37 within the mucous ciliary system and entering deep lung tissue. Construction of Alternative 1A
 38 would result in PM2.5 and PM10 concentrations at receptor locations that are below the significance
 39 thresholds established by the YSAQMD. Since Alternative 8 results in fewer overall emissions,
 40 localized particulate matter concentrations at analyzed receptors would not result in significant
 41 human health impacts. No mitigation is required.

1 **Impact AQ-11: Exposure of Sensitive Receptors to Health Hazards from Localized Particulate**
 2 **Matter in Excess of BAAQMD's Health-Based Concentration Thresholds**

3 *NEPA Effects:* Table 22-16 under Alternative 1A shows that the maximum predicted PM2.5
 4 concentrations are less than BAAQMD's adopted thresholds. Because Alternative 8 would require
 5 less construction activity and generate fewer emissions than Alternative 1A, PM2.5 concentrations
 6 from the development of Alternative 8 would also be less than the respective BAAQMD annual
 7 thresholds. The project would also implement all air district-recommended onsite fugitive dust
 8 controls, such as regular watering. Accordingly, this alternative would not expose sensitive
 9 receptors to adverse levels of localized particulate matter concentrations.

10 *CEQA Conclusion:* Respirable particulates pose a human health hazard by bypassing the defenses
 11 within the mucous ciliary system and entering deep lung tissue. Construction of Alternative 1A
 12 would result in PM2.5 concentrations at receptor locations that are below the significance
 13 thresholds established by the BAAQMD. Since Alternative 8 results in fewer overall emissions,
 14 localized particulate matter concentrations at analyzed receptors would not result in significant
 15 human health impacts. No mitigation is required.

16 **Impact AQ-12: Exposure of Sensitive Receptors to Health Hazards from Localized Particulate**
 17 **Matter in Excess of SJVAPCD's Health-Based Concentration Thresholds**

18 *NEPA Effects:* Table 22-17 under Alternative 1A shows that with exception of 24-hour PM10,
 19 maximum predicted PM2.5 and PM10 concentrations are less than SJVAPCD's adopted thresholds.
 20 The 24-hour PM10 concentrations attributable to the project would exceed the SJVAPCD's
 21 significance threshold at one receptor location. Emissions from the tunnel construction activities
 22 and concrete batch plant contribute to the exceedance at this location. Though Alternative 8 would
 23 result in less construction activities than Alternative 1A, it is anticipated that the receptor impacted
 24 by emissions from the concrete batch plant and tunnel activities would remain. Accordingly, this
 25 alternative would expose a sensitive receptor to adverse levels of localized particulate matter
 26 concentrations. Mitigation Measure AQ-9 is available to address this effect.

27 *CEQA Conclusion:* Respirable particulates pose a human health hazard by bypassing the defenses
 28 within the mucous ciliary system and entering deep lung tissue. Construction of Alternative 8 would
 29 result in the short-term exposure of receptors to PM10 concentrations that exceed SJVAPCD's
 30 threshold. This would be a significant impact. Mitigation Measure AQ-9 outlines a tiered strategy to
 31 reduce PM10 concentrations and public exposure to a less-than-significant level.

32 **Mitigation Measure AQ-9: Implement Measures to Reduce Re-Entrained Road Dust and**
 33 **Receptor Exposure to PM2.5 and PM10**

34 Please see Mitigation Measure AQ-9 under Impact AQ-9 in the discussion of Alternative 1A.

35 **Impact AQ-13: Exposure of Sensitive Receptors to Health Hazards from Localized Carbon**
 36 **Monoxide**

37 *NEPA Effects:* Construction activity required for Alternative 8 would be similar to activity required
 38 for Alternative 7. Accordingly, the potential for Alternative 8 to result in CO hot-spots during
 39 construction would be the same as Alternative 7. Given that construction activities typically do not
 40 result in CO hot-spots, onsite concentrations must comply with OSHA standards, and CO levels

1 dissipate as a function of distance, equipment-generated CO emissions (see Table 22-131) are not
2 anticipated to result in adverse health hazards to sensitive receptors.

3 Construction traffic may contribute to increased roadway congestion, which could lead to conditions
4 conducive to CO hot-spot formation. As shown in Table 19-8, the highest peak hour traffic volumes
5 under BPGPP—12,567 vehicles per hour—would occur on westbound Interstate 80 between
6 Suisun Valley Road and State Route 12.⁶¹ This is about half of the congested traffic volume modeled
7 by BAAQMD (24,000 vehicles per hour) that would be needed to contribute to a localized CO hot-
8 spot, and less than half of the traffic volume modeled by SMAQMD (31,600 vehicles per hour).
9 Accordingly, construction traffic is not anticipated to result in adverse health hazards to sensitive
10 receptors.

11 **CEQA Conclusion:** Continuous engine exhaust may elevate localized CO concentrations. Receptors
12 exposed to these CO “hot-spots” may have a greater likelihood of developing adverse health effects.
13 Construction sites are less likely to result in localized CO hot-spots due to the nature of construction
14 activities (Sacramento Metropolitan Air Quality Management District 2014), which normally utilize
15 diesel-powered equipment for intermittent or short durations. Moreover, construction sites must
16 comply with the OSHA CO exposure standards for onsite workers. Accordingly, given that
17 construction activities typically do not result in CO hot-spots, onsite concentrations must comply
18 with OSHA standards, and CO levels dissipate as a function of distance, equipment-generated CO
19 emissions are not anticipated to result in significant health hazards to sensitive receptors. Similarly,
20 peak-hour construction traffic on local roadways would not exceed BAAQMD’s or SMAQMD’s
21 conservative screening criteria for the formation potential CO hot-spots. This impact would be less
22 than significant. No mitigation is required.

23 **Impact AQ-14: Exposure of Sensitive Receptors to Health Hazards from Diesel Particulate**
24 **Matter in Excess of SMAQMD’s Chronic Non-Cancer and Cancer Risk Thresholds**

25 **NEPA Effects:** As shown in Table 22-18, Alternative 1A would not exceed the SMAQMD’s thresholds
26 for chronic non-cancer hazard or cancer risk. Because Alternative 8 would require less construction
27 activity and generate fewer emissions than Alternative 1A, chronic non-cancer hazard and cancer
28 risk from the development of Alternative 8 would also be less than the respective SMAQMD
29 significance thresholds. Accordingly, this alternative would not expose sensitive receptors to
30 adverse levels of DPM such as would result in chronic non-cancer hazards or cancer risk.

31 **CEQA Conclusion:** DPM generated during construction poses inhalation-related chronic non-cancer
32 hazard and cancer risk if adjacent receptors are exposed to significant concentrations for prolonged
33 durations. DPM generated during Alternative 8 construction would not exceed the SMAQMD’s
34 chronic non-cancer hazard or cancer risk threshold. Therefore, this impact for DPM emissions would
35 be less than significant. No mitigation is required.

⁶¹ The above volumes are based on the traffic analysis conducted for Alternative 1A. Since few vehicles would be required under Alternative 8, traffic impacts would likely be less than those estimated for Alternative 1A.

1 **Impact AQ-15: Exposure of Sensitive Receptors to Health Hazards from Diesel Particulate**
 2 **Matter in Excess of YSAQMD's Chronic Non-Cancer and Cancer Risk Thresholds**

3 **NEPA Effects:** As shown in Table 22-19, Alternative 1A would not exceed the YSAQMD's thresholds
 4 for chronic non-cancer hazard or cancer risk. Because Alternative 8 would require less construction
 5 activity and generate fewer emissions than Alternative 1A, chronic non-cancer hazard and cancer
 6 risk from the development of Alternative 8 would also be less than the respective YSAQMD
 7 significance thresholds. Accordingly, this alternative would not expose sensitive receptors to
 8 adverse levels of DPM such as would result in chronic non-cancer hazards or cancer risk.

9 **CEQA Conclusion:** DPM generated during construction poses inhalation-related chronic non-cancer
 10 hazard and cancer risk if adjacent receptors are exposed to significant concentrations for prolonged
 11 durations. The DPM generated during Alternative 8 construction would not exceed the YSAQMD's
 12 chronic non-cancer or cancer thresholds, and thus would not expose sensitive receptors to
 13 substantial health hazards. Therefore, this impact for DPM emissions would be less than significant.
 14 No mitigation is required.

15 **Impact AQ-16: Exposure of Sensitive Receptors to Health Hazards from Diesel Particulate**
 16 **Matter in Excess of BAAQMD's Chronic Non-Cancer and Cancer Risk Thresholds**

17 **NEPA Effects:** As shown in Table 22-20, Alternative 1A would not exceed the BAAQMD's thresholds
 18 for chronic non-cancer hazard; however, it would exceed BAAQMD's cancer risk threshold. The
 19 primary emission sources for these exceedances are from a project haul route, control structure
 20 work area and potential spoil area. While the impact of Alternative 8 would be less than Alternative
 21 1A, Alternative 8 may still expose sensitive receptors to adverse levels of carcinogenic DPM
 22 concentrations.

23 Mitigation Measure AQ-16 would be available to reduce exposure to substantial cancer risk by
 24 relocating affected receptors. Although Mitigation Measure AQ-16 would reduce the severity of this
 25 effect, the BDCP proponents are not solely responsible for implementation of the measure. If a
 26 landowner chooses not to accept DWR's offer of relocation assistance, an adverse effect in the form
 27 excess cancer risk above air district thresholds would occur. Therefore, this effect would be adverse.
 28 If, however, all landowners accept DWR's offer of relocation assistance, effects would not be
 29 adverse.

30 **CEQA Conclusion:** DPM generated during construction poses inhalation-related chronic non-cancer
 31 hazard and cancer risk if adjacent receptors are exposed to significant concentrations for prolonged
 32 durations. The DPM generated during Alternative 8 construction would not exceed the BAAQMD's
 33 chronic non-cancer hazard threshold; however, it would exceed the BAAQMD's cancer thresholds.
 34 Therefore, this impact for DPM emissions would be significant.

35 Mitigation Measure AQ-16 would be available to reduce exposure to substantial cancer risk by
 36 relocating affected receptors. Although Mitigation Measure AQ-16 would reduce the severity of this
 37 effect, the BDCP proponents are not solely responsible for implementation of the measure. If a
 38 landowner chooses not to accept DWR's offer of relocation assistance, a significant impact in the
 39 form excess cancer risk above air district thresholds would occur. Therefore, this effect would be
 40 significant and unavoidable. If, however, all landowners accept DWR's offer of relocation assistance,
 41 the impact would be less than significant.

1 **Mitigation Measure AQ-16: Relocate Sensitive Receptors to Avoid Excess Cancer Risk**

2 Please see Mitigation Measure AQ-16 under Impact AQ-16 in the discussion of Alternative 1A.

3 **Impact AQ-17: Exposure of Sensitive Receptors to Health Hazards from Diesel Particulate**
 4 **Matter in Excess of SJVAPCD's Chronic Non-Cancer and Cancer Risk Thresholds**

5 **NEPA Effects:** Table 22-21 under Alternative 1A shows that the maximum predicted chronic non-
 6 cancer hazard and cancer risk associated with the project are less than SJVAPCD's adopted
 7 thresholds. Because Alternative 8 would require less construction activity and generate fewer
 8 emissions than Alternative 1A, chronic non-cancer hazard and cancer risk from the development of
 9 Alternative 8 would also be less than the respective SJVAPCD significance thresholds. Accordingly,
 10 this alternative would not expose sensitive receptors to adverse levels of DPM such as would result
 11 in chronic non-cancer hazards or cancer risk.

12 **CEQA Conclusion:** DPM generated during construction poses inhalation-related chronic non-cancer
 13 hazard and cancer risk if adjacent receptors are exposed to significant concentrations for prolonged
 14 durations. The DPM generated during Alternative 8 construction would not exceed the SJVAPCD's
 15 chronic non-cancer or cancer thresholds, and thus would not expose sensitive receptors to
 16 substantial pollutant concentrations. Therefore, this impact for DPM emissions would be less than
 17 significant. No mitigation is required.

18 **Impact AQ-18: Exposure of Sensitive Receptors to *Coccidioides immitis* (Valley Fever)**

19 **NEPA Effects:** As discussed under Alternative 1A, earthmoving activities during construction could
 20 release *C. immitis* spores if filaments are present and other soil chemistry and climatic conditions
 21 are conducive to spore development. Receptors adjacent to the construction area may therefore be
 22 exposed to increase risk of inhaling *C. immitis* spores and subsequent development of Valley Fever.
 23 Dust-control measures are the primary defense against infection (United States Geological Survey
 24 2000). Implementation of advanced air-district recommended fugitive dust controls outlined in
 25 Appendix 3B, *Environmental Commitments*, would avoid dusty conditions and reduce the risk of
 26 contracting Valley Fever through routine watering and other controls. Therefore, this alternative's
 27 effect of exposure of sensitive receptors to increased Valley Fever risk during construction would
 28 not be adverse.

29 **CEQA Conclusion:** Construction of the water conveyance facility would involve earthmoving
 30 activities that could release *C. immitis* spores if filaments are present and other soil chemistry and
 31 climatic conditions are conducive to spore development. Receptors adjacent to the construction area
 32 may therefore be exposed to increase risk of inhaling *C. immitis* spores and subsequent development
 33 of Valley Fever. Implementation of air-district recommended fugitive dust controls outlined in
 34 Appendix 3B, *Environmental Commitments*, would avoid dusty conditions and reduce the risk of
 35 contracting Valley Fever through routine watering and other controls. Therefore, this impact would
 36 be less than significant. No mitigation is required.

37 **Impact AQ-19: Creation of Potential Odors Affecting a Substantial Number of People during**
 38 **Construction or Operation of the Proposed Water Conveyance Facility**

39 **NEPA Effects:** As discussed under Alternative 1A, odors from construction activities would be
 40 localized and generally confined to the immediate area surrounding the construction site. Moreover,
 41 odors would be temporary and localized, and they would cease once construction activities have

1 been completed. Thus, it is not anticipated that construction of CM1 would create objectionable
2 odors from construction equipment or asphalt paving.

3 Construction of the water conveyance facility would require removal of subsurface material during
4 tunnel excavation and sediment removal. As discussed under Alternative 1A, geotechnical tests
5 indicate that VOC levels in Plan Area soils are below the method detection limits, indicating that
6 organic decay of exposed RTM and sediment will be relatively low (URS 2014). Moreover, drying
7 and stockpiling of the removed RTM and sediment will occur under aerobic conditions, which will
8 further limit any potential decomposition and associated malodorous products. Accordingly, it is not
9 anticipated that tunnel and sediment excavation would create objectionable odors.

10 Typical facilities known to produce odors include landfills, wastewater treatment plants, food
11 processing facilities, and certain agricultural activities. Alternative 8 would not result in the addition
12 of facilities associated with odors, and as such, long-term operation of the water conveyance facility
13 would not result in objectionable odors.

14 **CEQA Conclusion:** Alternative 8 would not result in the addition of major odor producing facilities.
15 Diesel emissions during construction could generate temporary odors, but these would quickly
16 dissipate and cease once construction is completed. Likewise, potential odors generated during
17 asphalt paving would be addressed through mandatory compliance with air district rules and
18 regulations. While tunnel excavation would unearth substantial quantities of RTM, geotechnical
19 tests indicate that soils in the Plan Area have relatively low organic constituents. Moreover, drying
20 and stockpiling of the removed RTM will occur under aerobic conditions, which will further limit
21 any potential decomposition and associated malodorous products. Accordingly, the impact of
22 exposure of sensitive receptors to potential odors during construction would be less than
23 significant. No mitigation is required.

24 **Impact AQ-20: Generation of Criteria Pollutants in the Excess of Federal *De Minimis***
25 **Thresholds from Construction and Operation and Maintenance of the Proposed Water**
26 **Conveyance Facility**

27 **NEPA Effects:** As discussed above, emissions generated by Alternative 7 within the SFNA, SJVAB, and
28 SFBAAB would be representative of emissions generated by Alternative 8 (see Table 22-133).

29 **Sacramento Federal Nonattainment Area**

30 As shown in Table 22-133, implementation of Alternative 7 (and thus Alternative 8), would exceed
31 the following SFNA federal *de minimis* thresholds:

- 32 • ROG: 2024–2025
- 33 • NO_x: 2018–2028

34 ROG and NO_x are precursors to ozone, for which the SFNA is in nonattainment for the NAAQS. Since
35 project emissions exceed the federal *de minimis* thresholds for ROG and NO_x, a general conformity
36 determination must be made to demonstrate that total direct and indirect emissions of NO_x would
37 conform to the appropriate SFNA SIP for each year of construction in which the *de minimis*
38 thresholds are exceeded.

39 NO_x is also a precursor to PM and can contribute to PM formation. As discussed above, Sacramento
40 County is currently designated maintenance for the PM10 NAAQS and portions of the SVAB are
41 designated nonattainment for the PM2.5 NAAQS. NO_x emissions in excess of 100 tons per year in

1 Sacramento County trigger a secondary PM10 precursor threshold, whereas NO_x emissions in excess
 2 of 100 tons per year in the SVAB trigger a secondary PM2.5 precursor threshold. Since NO_x
 3 emissions can contribute to PM formation, NO_x emissions in excess of these secondary precursor
 4 thresholds could conflict with the applicable PM10 and PM2.5 SIPs. Accordingly, NO_x offsets pursued
 5 for the purposes of general conformity for those years in which NO_x emissions exceed 100 tons must
 6 occur within the federally designated PM2.5 nonattainment and PM10 maintenance areas of the
 7 SVAB.

8 As shown in Table 22-131, NO_x emissions generated by construction activities in SMAQMD
 9 (Sacramento County) would exceed 100 tons per year between 2022 and 2027. The project
 10 therefore triggers the secondary PM10 precursor threshold, requiring all NO_x offsets for 2022
 11 through 2027 to occur within Sacramento County.

12 Given the magnitude of NO_x emissions and the limited geographic scope available for offsets in 2022
 13 through 2027 (Sacramento County), neither Mitigation Measures AQ-1a nor 1b could feasibly reduce
 14 NO_x emissions to net zero for the purposes of general conformity.⁶² This impact would be adverse.
 15 In the event that Alternative 8 is selected as the APA, Reclamation, USFWS, and NMFS would need to
 16 demonstrate that conformity is met for NO_x and secondary PM10 formation through a local air
 17 quality modeling analysis (i.e., dispersion modeling) or other acceptable methods to ensure project
 18 emissions do not cause or contribute to any new violations of the NAAQS or increase the frequency
 19 or severity of any existing violations.

20 **Mitigation Measure AQ-1a: Mitigate and Offset Construction-Generated Criteria Pollutant**
 21 **Emissions within the SFNA to Net Zero (0) for Emissions in Excess of General Conformity**
 22 ***De Minimis* Thresholds (Where Applicable) and to Quantities below Applicable CEQA**
 23 **Thresholds for Other Pollutants**

24 Please see Mitigation Measure AQ-1a under Impact AQ-1 in the discussion of Alternative 1A.

25 **Mitigation Measure AQ-1b: Develop an Alternative or Complementary Offsite Mitigation**
 26 **Program to Mitigate and Offset Construction-Generated Criteria Pollutant Emissions**
 27 **within the SFNA to Net Zero (0) for Emissions in Excess of General Conformity *De Minimis***
 28 **Thresholds (Where Applicable) and to Quantities below Applicable CEQA Thresholds for**
 29 **Other Pollutants**

30 Please see Mitigation Measure AQ-1b under Impact AQ-1 in the discussion of Alternative 1A.

31 ***San Joaquin Valley Air Basin***

32 As shown in Table 22-133, implementation of Alternative 7 (and thus Alternative 8) would exceed
 33 the following SJVAB federal *de minimis* thresholds:

- 34 ● ROG: 2020–2025
- 35 ● NO_x: 2019–2026

⁶² The secondary PM precursor thresholds are triggered through the General Conformity Regulation (40 CFR 93.153 (a)(1)). Accordingly, confinement of the geographic scope for available offsets only applies to the General Conformity determination and does not influence mitigation feasibility for Impacts AQ-1 or AQ-28.

1 ROG and NO_x are precursors to ozone and NO_x is a precursor to PM, for which the SJVAB is in
 2 nonattainment for the NAAQS. Since project emissions exceed the federal *de minimis* threshold for
 3 ROG and NO_x, a general conformity determination must be made to demonstrate that total direct
 4 and indirect emissions of ROG and NO_x would conform to the appropriate SJVAB SIP for each year of
 5 construction in which the *de minimis* thresholds are exceeded.

6 NO_x is also a precursor to PM and can contribute to PM formation. As discussed above, the SJVAB is
 7 currently designated maintenance for the PM₁₀ NAAQS and nonattainment for the PM_{2.5} NAAQS.
 8 NO_x emissions in excess of 100 tons per year trigger a secondary PM precursor threshold, and could
 9 conflict with the applicable PM₁₀ and PM_{2.5} SIPs. As shown in Table 22-133, NO_x emissions
 10 generated by construction activities in the SJVAB would exceed 100 tons per year between 2020 and
 11 2024. NO_x offsets pursued for the purposes of general conformity for those years in which NO_x
 12 emissions exceed 100 tons must occur within the federally designated PM_{2.5} nonattainment and
 13 PM₁₀ maintenance areas of the SJVAB, which are consistent with the larger nonattainment
 14 boundary for ozone.

15 As shown in Appendix 22E, *General Conformity Determination*, Attachment 22E-1, SJVAPCD confirms
 16 that sufficient emissions reduction credits would be available to fully offset ROG and NO_x emissions
 17 in excess of the federal *de minimis* thresholds zero through implementation of Mitigation Measures
 18 AQ-4a and 4b. Mitigation Measures AQ-4a and 4b will ensure the requirements of the mitigation and
 19 offset program are implemented and conformity requirements for ROG and NO_x are met, should
 20 Alternative 8 be selected as the APA.

21 **Mitigation Measure AQ-4a: Mitigate and Offset Construction-Generated Criteria Pollutant**
 22 **Emissions within SJVAPCD/SJVAB to Net Zero (0) for Emissions in Excess of General**
 23 **Conformity *De Minimis* Thresholds (Where Applicable) and to Quantities below**
 24 **Applicable SJVAPCD CEQA Thresholds for Other Pollutants**

25 Please see Mitigation Measure AQ-4a under Impact AQ-4 in the discussion of Alternative 1A.

26 **Mitigation Measure AQ-4b: Develop an Alternative or Complementary Offsite Mitigation**
 27 **Program to Mitigate and Offset Construction-Generated Criteria Pollutant Emissions**
 28 **within the SJVAPCD/SJVAB to Net Zero (0) for Emissions in Excess of General Conformity**
 29 ***De Minimis* Thresholds (Where Applicable) and to Quantities below Applicable SJVAPCD**
 30 **CEQA Thresholds for Other Pollutants**

31 Please see Mitigation Measure AQ-4b under Impact AQ-4 in the discussion of Alternative 1A.

32 ***San Francisco Bay Area Air Basin***

33 As shown in Table 22-133, implementation of the Alternative 7 (and thus Alternative 8) would not
 34 exceed any of the SFBAAB federal *de minimis* thresholds. Accordingly, a general conformity
 35 determination is not required as total direct and indirect emissions would conform to the
 36 appropriate SFBAAB SIPs.

37 ***CEQA Conclusion:*** SFNA and SJVAB are classified as nonattainment areas with regard to the ozone
 38 NAAQS and the impact of increases in criteria pollutant emissions above the air basin *de minimis*
 39 thresholds could conflict with or obstruct implementation of the applicable air quality plans. Since
 40 construction emissions in the SFNA and SJVAB would exceed the *de minimis* thresholds for ROG and
 41 NO_x, this impact would be significant.

1 Mitigation Measures AQ-4a and AQ-4b would ensure project emissions would not result in an
 2 increase in regional ROG or NO_x in the SJVAB. These measures would therefore ensure total direct
 3 and indirect ROG and NO_x emissions generated by the project would conform to the appropriate
 4 SJVAB SIPs by offsetting the action's emissions in the same or nearby area to net zero. Accordingly,
 5 impacts would be less than significant with mitigation in the SJVAB.

6 Although Mitigation Measures AQ-1a and AQ-1b would reduce NO_x in the SFNA, given the magnitude
 7 of NO_x emissions and the limited geographic scope available for offsets (Sacramento County),
 8 neither measure could feasibly reduce NO_x emissions to net zero for the purposes of general
 9 conformity. This impact would be significant and unavoidable in the SFNA.

10 Emissions generated within the SFBAAB would not exceed the SFBAAB de minimis thresholds and
 11 would therefore conform to the appropriate SFBAAB SIPs. No mitigation is required.

12 **Impact AQ-21: Generation of Cumulative Greenhouse Gas Emissions during Construction of** 13 **the Proposed Water Conveyance Facility**

14 **NEPA Effects:** Construction activity required for Alternative 8 was assumed to equal activity
 15 required for Alternative 7. Emissions generated by Alternative 7 would therefore be representative
 16 of emissions generated by Alternative 7. As shown in Table 22-134, construction of Alternative 8
 17 would generate a total of 2.1 million metric tons of GHG emissions. As discussed in section 22.3.2,
 18 *Determination of Effects*, any increase in emissions above net zero associated with construction of
 19 the BDCP water conveyance features would be adverse. Accordingly, this effect would be adverse.
 20 Mitigation Measure AQ-21, which would develop a GHG Mitigation Program to reduce construction-
 21 related GHG emissions to net zero, is available address this effect.

22 **CEQA Conclusion:** Construction of Alternative 8 would generate a total of 2.1 million metric tons of
 23 GHG emissions. This is equivalent to adding approximately 450,000 typical passenger vehicles to the
 24 road during construction (U.S. Environmental Protection Agency 2014e). As discussed in section
 25 22.3.2, *Determination of Effects*, any increase in emissions above net zero associated with
 26 construction of the BDCP water conveyance features would be significant. Mitigation Measure AQ-21
 27 would develop a GHG Mitigation Program to reduce construction-related GHG emissions to net zero.
 28 Accordingly, this impact would be less-than-significant with implementation of Mitigation Measure
 29 AQ-21.

30 **Mitigation Measure AQ-21: Develop and Implement a GHG Mitigation Program to Reduce** 31 **Construction Related GHG Emissions to Net Zero (0)**

32 Please see Mitigation Measure AQ-21 under Impact AQ-1 in the discussion of Alternative 1A.

33 **Impact AQ-22: Generation of Cumulative Greenhouse Gas Emissions from Operation and** 34 **Maintenance of the Proposed Water Conveyance Facility and Increased Pumping**

35 **NEPA Effects:** Operation of Alternative 8 would generate direct and indirect GHG emissions. Sources
 36 of direct emissions include heavy-duty equipment, on road crew trucks, and employee vehicle
 37 traffic. Indirect emissions would be generated predominantly by electricity consumption required
 38 for pumping as well as, maintenance, lighting, and other activities.

39 Table 22-139 summarizes long-term operational GHG emissions associated with operations,
 40 maintenance, and increased SWP pumping. Emissions were quantified for both ELT and LLT
 41 conditions, although activities would take place annually until project decommissioning. Emissions

1 include state mandates to reduce GHG emissions (described in Impact AQ-21) are presented (there
 2 are no BDCP specific operational environmental commitments). Total CO₂e emissions are compared
 3 to both the No Action Alternative (NEPA point of comparison) and Existing Conditions (CEQA
 4 baseline). As discussed in Section 22.3.1.2, equipment emissions are assumed to be zero under both
 5 the No Action Alternative (NEPA point of comparison) and Existing Conditions (CEQA baseline). The
 6 equipment emissions presented in Table 22-139 are therefore representative of project impacts for
 7 both the NEPA and CEQA analysis.

8 **Table 22-139. GHG Emissions from Operation, Maintenance, and Increased SWP Pumping, Alternative**
 9 **8 (metric tons/year)**

Condition	Equipment CO ₂ e	Electricity CO ₂ e		Total CO ₂ e	
		NEPA Point of Comparison	CEQA Baseline	NEPA Point of Comparison	CEQA Baseline
ELT	386	-	-74,142	-	-73,756
LLT	379	-53,076	-84,032	-52,696	-83,652

Note: The *NEPA point of comparison* compares total CO₂e emissions after implementation of Alternative 8 to the No Action Alternative, whereas the *CEQA baseline* compares total CO₂e emissions to Existing Conditions. Negative values represent a net GHG reduction.

10

11 Table 22-137 summarizes equipment CO₂e emissions that would be generated in the BAAQMD,
 12 SMAQMD, and SJVAPCD (no operation emissions would be generated in the YSAQMD). The table
 13 does not include emissions from SWP pumping as these emissions would be generated by power
 14 plants located throughout the state (see discussion preceding this impact analysis). GHG emissions
 15 presented in Table 22-137 are therefore provided for information purposes only.

16 **SWP Operational and Maintenance GHG Emissions Analysis**

17 Alternative 8 would not add any additional net electricity demand to operation of the SWP and
 18 would in fact result in a net reduction in electricity demand (see Table 22-139). Therefore, there will
 19 be no impact on SWP operational emissions.

20 A small amount of additional GHG emissions from equipment would be emitted as a result of the
 21 maintenance of new facilities associated with Alternative 8 (Table 22-139). Emissions from
 22 additional maintenance activities would become part of the overall DWR maintenance program for
 23 the SWP and would be managed under DWR's CAP.

24 The CAP sets forth DWR's plan to manage its activities and operations to achieve its GHG emissions
 25 reduction goals. The CAP commits DWR to monitoring its emissions each year and evaluating its
 26 emissions every five years to determine whether it is on a trajectory to achieve its GHG emissions
 27 reduction goals. If it appears that DWR will not meet the GHG emission reduction goals established
 28 in the plan, DWR may make adjustments to existing emissions reduction measures, devise new
 29 measures to ensure achievement of the goals, or take other action.

30 Consistent with the analysis contained in the CAP and associated Initial Study and Negative
 31 Declaration for the CAP, BDCP Alternative 8 would not adversely affect DWR's ability to achieve the
 32 GHG emissions reduction goals set forth in the CAP. Further, Alternative 8 would not conflict with
 33 any of DWR's specific action GHG emissions reduction measures and implements all applicable

1 project level GHG emissions reduction measures as set forth in the CAP. BDCP Alternative 8 is
2 therefore consistent with the analysis performed in the CAP. There would be no adverse effect.

3 **CEQA Conclusion:** SWP GHG emissions currently are below 1990 levels and achievement of the
4 goals of the CAP means that total DWR GHG emissions will be reduced to 50% of 1990 levels by
5 2020 and to 80% of 1990 levels by 2050. The implementation of BDCP Alternative 8 would not
6 affect DWR's established emissions reduction goals or baseline (1990) emissions and therefore
7 would not result in a change in total DWR emissions that would be considered significant. Prior
8 adoption of the CAP by DWR already provides a commitment on the part of DWR to make all
9 necessary modifications to DWR's REPP (as described above) or any other GHG emission reduction
10 measure in the CAP that are necessary to achieve DWR's GHG emissions reduction goals. Therefore
11 no amendment to the approved CAP is necessary to ensure the occurrence of the additional GHG
12 emissions reduction activities needed to account for BDCP-related operational or maintenance
13 emissions. The effect of BDCP Alternative 8 with respect to GHG emissions is less than cumulatively
14 considerable and therefore less than significant. No mitigation is required.

15 **Impact AQ-23: Generation of Cumulative Greenhouse Gas Emissions from Increased CVP**
16 **Pumping as a Result of Implementation of CM1**

17 **NEPA Effects:** As previously discussed, DWR's CAP cannot be used to evaluate environmental
18 impacts associated with increased CVP pumping, as emissions associated with CVP are not under
19 DWR's control and are not included in the CAP. Accordingly, GHG emissions resulting from increased
20 CVP energy use are evaluated separately from GHG emissions generated as a result of SWP energy
21 use.

22 Under Alternative 8, operation of the CVP yields the generation of clean, GHG emissions-free,
23 hydroelectric energy. This electricity is sold into the California electricity market or directly to
24 energy users. Analysis of the existing and future no action condition indicates that the CVP generates
25 and will continue to generate all of the electricity needed to operate the CVP system and
26 approximately 3,500 GWh of excess hydroelectric energy that would be sold to energy users
27 throughout California.

28 Implementation of Alternative 8 is neither expected to require additional electricity over the No
29 Action Alternative nor reduce the amount of excess CVP generation available for sale from the CVP
30 to electricity users. The CVP is operated using energy generated at CVP hydroelectric facilities and
31 therefore results in no GHG emissions. Rather, implementation of Alternative 8 would reduce GHG
32 emissions by 48,058 to 61,845 metric tons of CO₂e, relative to the No Action Alternative (depending
33 on whether the RPS is assumed in the emissions calculations). Accordingly, there would be no
34 adverse effect.

35 **CEQA Conclusion:** Implementation of Alternative 8 is neither expected to require additional
36 electricity over Existing Conditions nor reduce the amount of excess CVP generation available for
37 sale from the CVP to electricity users. All power supplied to CVP facilities would continue to be
38 supplied by GHG emissions-free hydroelectricity and there would be no increase in GHG emissions
39 over Existing Conditions as a result of CVP operations. The impact would be less than significant and
40 no mitigation is required.

1 **Impact AQ-24: Generation of Criteria Pollutants from Implementation of CM2–CM11**

2 **NEPA Effects:** Table 22-29 summarizes potential construction and operational emissions that may
 3 be generated by implementation of CM2–CM11. See the discussion of Impact AQ-24 under
 4 Alternative 1A.

5 Criteria pollutants from restoration and enhancement actions could exceed applicable general
 6 conformity *de minimis* levels and applicable local thresholds. The effect would vary according to the
 7 equipment used in construction of a specific conservation measure, the location, the timing of the
 8 actions called for in the conservation measure, and the air quality conditions at the time of
 9 implementation; these effects would be evaluated and identified in the subsequent project-level
 10 environmental analysis conducted for the CM2–CM11 restoration and enhancement actions. The
 11 effect of increases in emissions during implementation of CM2–CM11 in excess of applicable general
 12 conformity *de minimis* levels and air district regional thresholds (Table 22-8) could violate air basin
 13 SIPs and worsen existing air quality conditions. Mitigation Measure AQ-24 would be available to
 14 reduce this effect, but emissions would still be adverse.

15 **CEQA Conclusion:** Construction and operational emissions associated with the restoration and
 16 enhancement actions would result in a significant impact if the incremental difference, or increase,
 17 relative to Existing Conditions exceeds the applicable local air district thresholds shown in Table 22-
 18 8; these effects are expected to be further evaluated and identified in the subsequent project-level
 19 environmental analysis conducted for the CM2–CM11 restoration and enhancement actions.
 20 Mitigation Measure AQ-24 would be available to reduce this effect, but may not be sufficient to
 21 reduce emissions below applicable air quality management district thresholds (see Table 22-8).
 22 Consequently, this impact would be significant and unavoidable.

23 **Mitigation Measure AQ-24: Develop an Air Quality Mitigation Plan (AQMP) to Ensure Air** 24 **District Regulations and Recommended Mitigation are Incorporated into Future** 25 **Conservation Measures and Associated Project Activities**

26 Please see Mitigation Measure AQ-24 under Impact AQ-24 in the discussion of Alternative 1A.

27 **Impact AQ-25: Exposure of Sensitive Receptors to Health Hazards from Localized Particulate** 28 **Matter, Carbon Monoxide, and Diesel Particulate Matter from Implementation of CM2–CM11**

29 **NEPA Effects:** The potential for Alternative 8 to expose sensitive receptors increased health hazards
 30 from localized PM, CO, and DPM would be similar to Alternative 1A. Activities shown in Table 22-29
 31 with the greatest potential to have short or long-term air quality impacts are also anticipated to
 32 have the greatest potential to expose receptors to substantial pollutant concentrations. The effect
 33 would vary according to the equipment used, the location and timing of the actions called for in the
 34 conservation measure, the meteorological and air quality conditions at the time of implementation,
 35 and the location of receptors relative to the emission source. Potential health effects would be
 36 evaluated and identified in the subsequent project-level environmental analysis conducted for the
 37 CM2–CM11 restoration and enhancement actions.

38 The effect of increases in PM, CO, or DPM (cancer and non-cancer-risk) in excess of applicable air
 39 district thresholds (Table 22-8) at receptor locations could result in adverse health impacts.
 40 Mitigation Measures AQ-24 and AQ-25 would be available to reduce this effect.

41 **CEQA Conclusion:** Construction and operational emissions associated with the restoration and
 42 enhancement actions under Alternative 8 would result in a significant impact if PM, CO, or DPM

(cancer and non-cancer-risk) concentrations at receptor locations exceed the applicable local air district thresholds shown in Table 22-8; these effects are expected to be further evaluated and identified in the subsequent project-level environmental analysis conducted for the CM2–CM11 restoration and enhancement actions. Mitigation Measures AQ-24 and AQ-25 would ensure localized concentrations at receptor locations would be below applicable air quality management district thresholds (see Table 22-8). Consequently, this impact would be less than significant.

Mitigation Measure AQ-24: Develop an Air Quality Mitigation Plan (AQMP) to Ensure Air District Regulations and Recommended Mitigation are Incorporated into Future Conservation Measures and Associated Project Activities

Please see Mitigation Measure AQ-24 under Impact AQ-24 in the discussion of Alternative 1A.

Mitigation Measure AQ-25: Prepare a Project-Level Health Risk Assessment to Reduce Potential Health Risks from Exposure to Localized DPM and PM Concentrations

Please see Mitigation Measure AQ-25 under Impact AQ-25 in the discussion of Alternative 1A.

Impact AQ-26: Creation of Potential Odors Affecting a Substantial Number of People from Implementation of CM2–CM11

NEPA Effects: The potential for Alternative 8 to expose sensitive receptors increased odors would be similar to Alternative 1A. Accordingly, construction activities associated with CM2–CM11 are not anticipated to result in nuisance odors. Similarly, while restored land uses associated with the program have the potential to generate odors from natural processes, the emissions would be similar in origin and magnitude to the existing land use types in the restored area (e.g., managed wetlands). Moreover, specific odor effects would be evaluated and identified in the subsequent project-level environmental analysis conducted for the CM2–CM11 restoration and enhancement actions. Accordingly, odor-related effects associated with CM2–CM11 would not be adverse.

CEQA Conclusion: Alternative 8 would not result in the addition of major odor producing facilities. Diesel emissions during construction could generate temporary odors, but these would quickly dissipate and cease once construction is completed. Increases in wetland, tidal, and upland habitats may increase the potential for odors from natural processes. However, the origin and magnitude of odors would be similar to the existing land use types in the restored area (e.g., managed wetlands). Moreover, specific odor impacts would be evaluated and identified in the subsequent project-level environmental analysis conducted for the CM2–CM11 restoration and enhancement actions. Accordingly, the impact of exposure of sensitive receptors to potential odors would be less than significant. No mitigation is required.

Impact AQ-27: Generation of Cumulative Greenhouse Gas Emissions from Implementation of CM2–CM11

NEPA Effects: CM2–CM11 implemented under Alternative 8 would result in local GHG emissions from construction equipment and vehicle exhaust, similar to Alternative 1A. Restoration activities with the greatest potential for emissions include those that break ground and require use of earthmoving equipment. The type of restoration action and related construction equipment use are shown in Table 22-29. Implementing CM2–CM11 would also affect long-term sequestration rates through land use changes, such as conversion of agricultural land to wetlands, inundation of peat soils, drainage of peat soils, and removal or planting of carbon-sequestering plants.

1 Without additional information on site-specific characteristics associated with each of the
 2 restoration components, a complete assessment of GHG flux from CM2–CM11 is currently not
 3 possible. The effect of carbon sequestration and CH₄ generation would vary by land use type, season,
 4 and chemical and biological characteristics; these effects would be evaluated and identified in the
 5 subsequent project-level environmental analysis conducted for the CM2–CM11 restoration and
 6 enhancement actions. Mitigation Measures AQ-24 and AQ-27 would be available to reduce this
 7 effect. However, due to the potential for increases in GHG emissions from construction and land use
 8 change, this effect would be adverse.

9 **CEQA Conclusion:** The restoration and enhancement actions under Alternative 8 could result in a
 10 significant impact if activities are inconsistent with applicable GHG reduction plans, do not
 11 contribute to a lower carbon future, or generate excessive emissions, relative to other projects
 12 throughout the state. These effects are expected to be further evaluated and identified in the
 13 subsequent project-level environmental analysis conducted for the CM2–CM11 restoration and
 14 enhancement actions. Mitigation Measures AQ-24 and AQ-27 would be available to reduce this
 15 impact, but may not be sufficient to reduce to a less-than-significant level. Consequently, this impact
 16 would be significant and unavoidable.

17 **Mitigation Measure AQ-24: Develop an Air Quality Mitigation Plan (AQMP) to Ensure Air**
 18 **District Regulations and Recommended Mitigation are Incorporated into Future**
 19 **Conservation Measures and Associated Project Activities**

20 Please see Mitigation Measure AQ-24 under Impact AQ-24 in the discussion of Alternative 1A.

21 **Mitigation Measure AQ-27: Prepare a Land Use Sequestration Analysis to Quantify and**
 22 **Mitigate (as Needed) GHG Flux Associated with Conservation Measures and Associated**
 23 **Project Activities**

24 Please see Mitigation Measure AQ-27 under Impact AQ-27 in the discussion of Alternative 1A.

25 **22.3.3.16 Alternative 9—Through Delta/Separate Corridors (15,000 cfs;**
 26 **Operational Scenario G)**

27 Under Alternative 9, two intakes would be constructed at the entrances to the Delta Cross Channel
 28 and Georgiana Slough. These intakes would consist of fish screens placed on the existing channels.
 29 Two small pumping plants would be constructed on the San Joaquin River at the head of Old River
 30 and on Middle River upstream of Victoria Canal. There would be no new forebay. The conveyance
 31 would be through existing canals and Delta channels, with modifications to the levees and channels,
 32 operable barriers, a fish movement corridor around Clifton Court Forebay, and a water supply
 33 corridor.

34 Construction and operation of Alternative 9 would require the use of electricity, which would be
 35 supplied by the California electrical grid. Power plants located throughout the state supply the grid
 36 with power, which will be distributed to the Study area to meet project demand. Power supplied by
 37 statewide power plants will generate criteria pollutants. Because these power plants are located
 38 throughout the state, criteria pollutant emissions associated with Alternative 9 electricity demand
 39 cannot be ascribed to a specific air basin or air district within the Study area. Criteria pollutant
 40 emissions from electricity consumption, which are summarized in Table 22-140, are therefore
 41 provided for informational purposes only and are not included in the impact conclusion. Negative
 42 values represent an emissions benefit, relative to the No Action Alternative or Existing Conditions.

1 **Table 22-140. Criteria Pollutant Emissions from Electricity Consumption: Construction and Net**
 2 **Project Operations, Alternative 9 (tons/year)^{a,b}**

Year	Analysis	ROG	CO	NO _x	PM10	PM2.5 ^c	SO ₂
2016	-	0	0	0	0	0	0
2017	-	0	0	0	0	0	0
2018	-	<1	<1	<1	<1	<1	<1
2019	-	<1	<1	<1	<1	<1	<1
2020	-	<1	2	<1	<1	<1	1
2021	-	<1	4	<1	<1	<1	2
2022	-	<1	6	<1	1	1	3
2023	-	<1	5	<1	<1	<1	2
2024	-	<1	6	<1	<1	<1	2
2025	-	<1	4	<1	<1	<1	2
2026	-	<1	1	<1	<1	<1	1
2027	-	<1	<1	<1	<1	<1	<1
2028	-	<1	<1	<1	<1	<1	<1
2029	-	<1	<1	<1	<1	<1	<1
ELT	CEQA	-1	-9	-118	-10	-10	-50
LLT	NEPA	<0	-1	-12	-1	-1	-5
LLT	CEQA	-1	-13	-178	-15	-15	-75

NEPA = Compares criteria pollutant emissions after implementation of Alternative 9 to the No Action Alternative.

CEQA = Compares criteria pollutant emissions after implementation of Alternative 9 to Existing Conditions.

^a Emissions assume implementation of RPS (see Appendix 22A, *Air Quality Analysis Methodology*). Power plants that generate electricity for the proposed project would be subject to local air district permitting requirements, including standards to implement BACT to reduce criteria pollutant emissions.

^b Because GHG emissions are cumulative (see Section 22.3.2.1) and not evaluated at the local air basin or air district level, they are discussed in Impacts AQ-21 and AQ-22. The GHG analysis for SWP power utilizes actual and forecasted GHG emissions rates for the SWP system, which differs slightly from the above analysis. Statewide grid average emission factors were utilized for the above analysis as criteria pollutant emission factors for SWP were unavailable. Please also note that the above analysis does not account for additional renewable energy that will be procured through modifications to DWR's REPP (see Impact AQ-22). Accordingly, the emissions results presented above represent a conservative assessment of potential criteria pollutant emissions.

^c Emission factors for PM2.5 are currently unavailable. Consequently, PM2.5 emissions were assumed to equal PM10 emissions. Because PM2.5 represents a fraction of PM10, this approach represents a conservative assessment of PM2.5 emissions from electricity consumption.

3 Construction activities would generate emissions of ozone precursors (ROG and NO_x), CO, PM10,
 4 PM2.5, and SO₂. Table 22-141 summarizes criteria pollutant emissions that would be generated in
 5 the BAAQMD, SMAQMD, and SJVAPCD in pounds per day and tons per year (no construction
 6 emissions would be generated in the YSAQMD). Emissions estimates include implementation of
 7 environmental commitments (see Appendix 3B, *Environmental Commitments*). Although emissions
 8 are presented in different units (pounds and tons), the amounts of emissions are identical (i.e., 2,000
 9 pounds is identical to 1 ton). Summarizing emissions in both pounds per day and tons per year is
 10 necessary to evaluate project-level effects against the appropriate air district thresholds, which are
 11 given in both pounds and tons (see Table 22-8).

1 As shown in Appendix 22B, *Air Quality Assumptions*, construction activities during several phases
2 will likely occur concurrently. To ensure a conservative analysis, the maximum daily emissions
3 during these periods of overlap were estimated assuming all equipment would operate at the same
4 time—this gives the maximum total project-related air quality impact during construction.
5 Accordingly, the daily emissions estimates represent a conservative assessment of construction
6 impacts. Exceedances of the air district thresholds are shown in underlined text.
7

1 **Table 22-141. Criteria Pollutant Emissions from Construction of Alternative 9 (pounds/day and tons/year)**

Year	Maximum Daily Emissions (pounds/day)										Annual Emissions (tons/year)									
	Bay Area Air Quality Management District										Bay Area Air Quality Management District									
	ROG	NO _x	CO	PM10			PM2.5			SO ₂	ROG	NO _x	CO	PM10			PM2.5			SO ₂
			Exhaust	Dust	Total	Exhaust	Dust	Total				Exhaust	Dust	Total	Exhaust	Dust	Total			
2016	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
2017	<1	6	3	1	4	4	1	1	2	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
2018	25	<u>287</u>	180	4	224	227	4	52	55	6	1	5	6	<1	5	5	<1	1	1	
2019	<u>175</u>	<u>1,424</u>	1,135	18	518	536	17	100	117	10	7	49	47	1	21	22	1	3	4	
2020	50	<u>560</u>	296	7	262	268	6	58	65	7	4	38	26	1	11	12	1	2	3	
2021	<u>55</u>	<u>587</u>	324	7	260	266	7	58	64	6	5	39	27	1	10	11	1	2	2	
2022	<u>55</u>	<u>648</u>	316	7	368	372	6	82	87	5	3	27	17	<1	11	11	<1	2	2	
2023	<u>75</u>	<u>679</u>	489	7	383	386	7	84	90	5	5	47	36	<1	26	26	<1	5	5	
2024	<u>81</u>	<u>717</u>	511	6	300	306	6	60	66	4	5	44	32	<1	30	30	<1	6	6	
2025	11	<u>209</u>	65	1	181	182	1	44	44	2	1	12	4	<1	16	16	<1	3	3	
2026	11	<u>209</u>	66	1	181	182	1	44	44	2	1	13	4	<1	16	16	<1	3	3	
2027	11	<u>208</u>	66	1	181	182	1	44	44	2	1	11	4	<1	18	18	<1	4	4	
2028	11	<u>208</u>	66	1	181	182	1	44	44	2	0	3	1	<1	5	5	<1	1	1	
2029	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
<i>Thresholds</i>	<i>54</i>	<i>54</i>	<i>-</i>	<i>82</i>	<i>BMPs</i>	<i>-</i>	<i>54</i>	<i>BMPs</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	
Year	Sacramento Metropolitan Air Quality Management District										Sacramento Metropolitan Air Quality Management District									
	ROG	NO _x	CO	PM10			PM2.5			SO ₂	ROG	NO _x	CO	PM10			PM2.5			SO ₂
				Exhaust	Dust	Total	Exhaust	Dust	Total				Exhaust	Dust	Total	Exhaust	Dust	Total		
2016	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
2017	<1	4	3	1	1	2	1	<1	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	0	
2018	1	8	6	2	31	33	2	5	7	0	0	0	0	3	3	0	0	1	0	
2019	128	<u>860</u>	848	12	266	278	12	40	52	4	4	24	29	1	14	15	1	2	3	
2020	<1	2	1	<1	29	29	<1	4	4	<1	<1	<1	<1	2	2	<1	<1	<1	<1	
2021	0	0	0	0	29	29	0	4	4	0	0	0	0	2	2	0	<1	<1	0	
2022	160	<u>1,285</u>	1,124	15	465	480	15	60	74	11	9	70	65	1	48	49	1	6	7	
2023	437	<u>3,557</u>	2,979	49	1,088	1,128	47	139	177	37	39	311	269	4	103	107	4	13	17	
2024	568	<u>4,588</u>	3,748	65	1,427	1,492	63	183	245	35	49	382	327	5	135	140	5	18	23	
2025	517	<u>4,980</u>	3,669	59	1,786	1,844	57	223	279	35	25	195	181	3	89	92	3	12	15	
2026	290	<u>1,664</u>	1,549	22	606	628	22	92	113	24	24	160	161	2	75	77	2	11	13	
2027	242	<u>1,876</u>	1,662	26	698	724	26	103	129	38	24	177	161	2	83	85	2	12	14	
2028	184	<u>1,007</u>	827	11	442	453	10	60	70	4	6	42	34	<1	25	25	<1	3	4	
2029	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
<i>Thresholds</i>	<i>-</i>	<i>85</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	

Year	San Joaquin Valley Air Pollution Control District										San Joaquin Valley Air Pollution Control District										
	ROG	NO _x	CO	PM10			PM2.5			SO ₂	ROG	NO _x	CO	PM10			PM2.5			SO ₂	
				Exhaust	Dust	Total	Exhaust	Dust	Total					Exhaust	Dust	Total	Exhaust	Dust	Total		
2016	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2017	<1	2	2	1	1	1	1	<1	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
2018	24	336	177	4	159	162	4	36	39	5	1	6	5	<1	5	5	<1	1	1	<1	<1
2019	36	534	219	6	196	202	6	44	49	5	2	<u>18</u>	12	<1	8	8	<1	1	2	<1	<1
2020	37	505	216	5	184	189	4	40	45	5	3	<u>25</u>	17	<1	8	9	<1	1	2	<1	<1
2021	41	529	243	5	184	189	5	40	45	5	3	<u>25</u>	17	<1	7	8	<1	1	2	<1	<1
2022	51	613	356	5	250	254	5	47	51	3	2	<u>16</u>	12	<1	7	7	<1	1	1	<1	<1
2023	134	1,001	899	13	309	320	13	57	68	4	9	<u>69</u>	65	1	25	<u>25</u>	1	4	5	<1	<1
2024	154	1,199	1,007	11	327	338	11	48	59	4	9	<u>61</u>	58	1	28	<u>29</u>	1	4	5	<1	<1
2025	36	262	189	3	116	119	3	22	24	1	1	8	8	<1	11	11	<1	2	2	<1	<1
2026	33	240	172	2	115	116	2	21	23	1	1	5	5	<1	10	10	<1	1	2	<1	<1
2027	31	226	167	2	108	109	2	20	22	1	1	8	7	<1	13	14	<1	2	2	<1	<1
2028	31	224	157	2	105	107	2	20	22	1	1	5	4	<1	5	5	<1	1	1	<1	<1
2029	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<i>Thresholds</i>	-	-	-	-	-	-	-	-	-	-	<i>10</i>	<i>10</i>	-	-	-	<i>15</i>	-	-	<i>15</i>	-	-

1

1 Operation and maintenance activities under Alternative 9 would result in emissions of ROG, NO_x, CO,
2 PM10, PM2.5, and SO₂. Emissions were quantified for both ELT and LLT conditions, although
3 activities would take place annually until project decommissioning. Future emissions, in general, are
4 anticipated to lessen because of continuing improvements in vehicle and equipment engine
5 technology.

6 Table 22-142 summarizes criteria pollutant emissions associated with operation of Alternative 9 in
7 the SJVAPCD in pounds per day and tons per year (no operational emissions would be generated in
8 the BAAQMD, SMAQMD, or YSAMQD). Although emissions are presented in different units (pounds
9 and tons), the amounts of emissions are identical (i.e., 2,000 pounds is identical to 1 ton).

10 Summarizing emissions in both pounds per day and tons per year is necessary to evaluate project-
11 level effects against the appropriate air district thresholds, which are given in both pounds and tons
12 (see Table 22-8).

13 **Table 22-142. Criteria Pollutant Emissions from Operation of Alternative 9 (pounds per day and**
14 **tons per year)**

Condition	Maximum Daily Emissions (pounds/day)						Annual Emissions (tons/year)					
	San Joaquin Valley Air Pollution Control District						San Joaquin Valley Air Pollution Control District					
	ROG	NO _x	CO	PM10	PM2.5	SO ₂	ROG	NO _x	CO	PM10	PM2.5	SO ₂
ELT	1	7	13	2	1	<1	0.06	0.36	0.75	0.12	0.04	<0.01
LLT	1	6	13	2	1	<1	0.05	0.31	0.71	0.11	0.03	<0.01
<i>Thresholds</i>	-	-	-	-	-	-	10	10	-	15	15	-

15
16 **Impact AQ-1: Generation of Criteria Pollutants in Excess of the SMAQMD Regional Thresholds**
17 **during Construction of the Proposed Water Conveyance Facility**

18 **NEPA Effects:** As shown in Table 22-141, construction emissions would exceed SMAQMD's daily NO_x
19 threshold in 2019 and for all years between 2022 and 2028, even with implementation of
20 environmental commitments. Since NO_x is a precursor to ozone and PM, exceedances of SMAQMD's
21 daily NO_x threshold could impact both regional ozone and PM formation, which could worsen
22 regional air quality and air basin attainment of the NAAQS and CAAQS.

23 While equipment could operate at any work area identified for this alternative, the highest level of
24 NO_x emissions in the SMAQMD is expected to occur at those sites where the duration and intensity
25 of construction activities would be greatest.

26 Environmental commitments will reduce construction-related emissions; however, as shown in
27 Table 22-141, NO_x emissions would still exceed SMAQMD's threshold identified in Table 22-8 and
28 would result in an adverse effect to air quality. Mitigation Measures AQ-1a and AQ-1b would be
29 available to reduce NO_x emissions, and would thus address regional effects related to secondary
30 ozone and PM formation

31 **CEQA Conclusion:** NO_x emissions generated during construction would exceed SMAQMD threshold
32 identified in Table 22-8. Since NO_x is a precursor to ozone and PM, exceedances of SMAQMD's daily
33 NO_x threshold could impact both regional ozone and PM formation. SMAQMD's regional emissions
34 thresholds (Table 22-8) and PM10 screening criteria have been adopted to ensure projects do not
35 hinder attainment of the CAAQS or NAAQS. The impact of generating NO_x emissions in excess of

1 local air district thresholds would therefore violate applicable air quality standards in the Study area
 2 and could contribute to or worsen an existing air quality conditions. This would be a significant
 3 impact. Mitigation Measures AQ-1a and AQ-1b would be available to reduce NO_x emissions to a less-
 4 than-significant level by offsetting emissions to quantities below SMAQMD CEQA thresholds (see
 5 Table 22-8).

6 **Mitigation Measure AQ-1a: Mitigate and Offset Construction-Generated Criteria Pollutant**
 7 **Emissions within the SFNA to Net Zero (0) for Emissions in Excess of General Conformity**
 8 ***De Minimis* Thresholds (Where Applicable) and to Quantities below Applicable CEQA**
 9 **Thresholds for Other Pollutants**

10 Please see Mitigation Measure AQ-1a under Impact AQ-1 in the discussion of Alternative 1A.

11 **Mitigation Measure AQ-1b: Develop an Alternative or Complementary Offsite Mitigation**
 12 **Program to Mitigate and Offset Construction-Generated Criteria Pollutant Emissions**
 13 **within the SFNA to Net Zero (0) for Emissions in Excess of General Conformity *De Minimis***
 14 **Thresholds (Where Applicable) and to Quantities below Applicable CEQA Thresholds for**
 15 **Other Pollutants**

16 Please see Mitigation Measure AQ-1b under Impact AQ-1 in the discussion of Alternative 1A.

17 **Impact AQ-2: Generation of Criteria Pollutants in Excess of the YSAQMD Regional Thresholds**
 18 **during Construction of the Proposed Water Conveyance Facility**

19 ***NEPA Effects:*** Construction of Alternative 9 would occur in the SMAQMD, SJVAPCD, and BAAQMD.
 20 No construction emissions would be generated in the YSAQMD. Consequently, construction of
 21 Alternative 9 would neither exceed the YSAQMD regional thresholds of significance nor result in an
 22 adverse effect to air quality.

23 ***CEQA Conclusion:*** Alternative 9 would require any construction in the YSAQMD and no emissions
 24 would be generated. Consequently, construction of Alternative 9 would not contribute to or worsen
 25 existing air quality conditions in the YSAQMD. This impact would be less than significant. No
 26 mitigation is required.

27 **Impact AQ-3: Generation of Criteria Pollutants in Excess of the BAAQMD Regional Thresholds**
 28 **during Construction of the Proposed Water Conveyance Facility**

29 ***NEPA Effects:*** As shown in Table 22-141, construction emissions would exceed BAAQMD's daily
 30 thresholds for the following pollutants and years, even with implementation of environmental
 31 commitments.

- 32 ● ROG: 2019 and 2021–2024
- 33 ● NO_x: 2018–2028

34 Since ROG and NO_x are precursors to ozone and NO_x is a precursor to PM, exceedances of BAAQMD's
 35 ROG and NO_x thresholds could impact both regional ozone and PM formation, which could worsen
 36 regional air quality and air basin attainment of the NAAQS and CAAQS.

37 Environmental commitments outlined in Appendix 3B, *Environmental Commitments*, will reduce
 38 construction-related emissions; however, as shown in Table 22-141, ROG and NO_x emissions would
 39 still exceed BAAQMD's thresholds identified in Table 22-8 and would result in an adverse effect to

1 air quality. Mitigation Measures AQ-3a and AQ-3b are available to reduce ROG and NO_x emissions,
2 and would thus address regional effects related to secondary ozone and PM formation.

3 **CEQA Conclusion:** Emissions of ROG and NO_x generated during construction would exceed BAAQMD
4 thresholds identified in Table 22-8. Since ROG and NO_x are precursors to ozone and NO_x is a
5 precursor to PM, exceedances of BAAQMD's ROG and NO_x thresholds could impact both regional
6 ozone and PM formation. BAAQMD's regional emissions thresholds (Table 22-8) have been adopted
7 to ensure projects do not hinder attainment of the CAAQS or NAAQS. The impact of generating
8 emissions in excess of local air district thresholds would therefore violate applicable air quality
9 standards in the Study area and could contribute to or worsen an existing air quality conditions.
10 This would be a significant impact. Mitigation Measures AQ-3a and AQ-3b would be available to
11 reduce ROG and NO_x emissions to a less-than-significant level.

12 **Mitigation Measure AQ-3a: Mitigate and Offset Construction-Generated Criteria Pollutant**
13 **Emissions within BAAQMD/SFBAAB to Net Zero (0) for Emissions in Excess of General**
14 **Conformity *De Minimis* Thresholds (Where Applicable) and to Quantities below**
15 **Applicable BAAQMD CEQA Thresholds for Other Pollutants**

16 Please see Mitigation Measure AQ-3a under Impact AQ-3 in the discussion of Alternative 1A.

17 **Mitigation Measure AQ-3b: Develop an Alternative or Complementary Offsite Mitigation**
18 **Program to Mitigate and Offset Construction-Generated Criteria Pollutant Emissions**
19 **within the BAAQMD/SFBAAB to Net Zero (0) for Emissions in Excess of General**
20 **Conformity *De Minimis* Thresholds (Where Applicable) and to Quantities below**
21 **Applicable BAAQMD CEQA Thresholds for Other Pollutants**

22 Please see Mitigation Measure AQ-3b under Impact AQ-3 in the discussion of Alternative 1A.

23 **Impact AQ-4: Generation of Criteria Pollutants in Excess of the SJVAPCD Regional Thresholds**
24 **during Construction of the Proposed Water Conveyance Facility**

25 **NEPA Effects:** As shown in Table 22-141, construction emissions would exceed SJVAPCD's
26 thresholds for the following pollutants and years, even with implementation of environmental
27 commitments. The annual ROG threshold would also be exceeded in 2015. All other pollutants would
28 be below air district thresholds and therefore would not result in an adverse air quality effect.

- 29 ● NO_x: 2019–2024
- 30 ● PM10: 2023–2024

31 Since NO_x is a precursor to ozone and PM, exceedances of SJVAPCD's NO_x thresholds could impact
32 both regional ozone and PM formation, which could worsen regional air quality and air basin
33 attainment of the NAAQS and CAAQS. Similarly, exceedances of SJVAPCD's PM10 threshold could
34 impede attainment of the NAAQS and CAAQS for PM10.

35 Environmental commitments outlined in Appendix 3B, *Environmental Commitments*, will reduce
36 construction-related emissions; however, as shown in Table 22-141, NO_x and PM10 emissions
37 would still exceed SJVAPCD's thresholds identified in Table 22-8 and would result in an adverse
38 effect to air quality. Mitigation Measures AQ-4a and AQ-4b are available to reduce NO_x and PM10
39 emissions, and would thus address regional effects related to secondary ozone and PM formation.

1 **CEQA Conclusion:** Emissions of NO_x and PM₁₀ generated during construction would exceed
 2 SJVAPCD's regional significance threshold identified in Table 22-8. Since NO_x is a precursor to ozone
 3 and PM, exceedances of SJVAPCD's NO_x thresholds could impact both regional ozone and PM
 4 formation, which could worsen regional air quality and air basin attainment of the NAAQS and
 5 CAAQS. Similarly, exceedances of SJVAPCD's PM₁₀ threshold could impede attainment of the NAAQS
 6 and CAAQS for PM₁₀. SJVAPCD's regional emissions thresholds (Table 22-8) have been adopted to
 7 ensure projects do not hinder attainment of the CAAQS or NAAQS. The impact of generating NO_x and
 8 PM₁₀ emissions in excess of local air district thresholds would therefore violate applicable air
 9 quality standards in the Study area and could contribute to or worsen an existing air quality
 10 conditions. This would be a significant impact. Mitigation Measures AQ-4a and AQ-4b would reduce
 11 this impact to less-than-significant levels.

12 **Mitigation Measure AQ-4a: Mitigate and Offset Construction-Generated Criteria Pollutant**
 13 **Emissions within SJVAPCD/SJVAB to Net Zero (0) for Emissions in Excess of General**
 14 **Conformity *De Minimis* Thresholds (Where Applicable) and to Quantities below**
 15 **Applicable SJVAPCD CEQA Thresholds for Other Pollutants**

16 Please see Mitigation Measure AQ-4a under Impact AQ-4 in the discussion of Alternative 1A.

17 **Mitigation Measure AQ-4b: Develop an Alternative or Complementary Offsite Mitigation**
 18 **Program to Mitigate and Offset Construction-Generated Criteria Pollutant Emissions**
 19 **within the SJVAPCD/SJVAB to Net Zero (0) for Emissions in Excess of General Conformity**
 20 ***De Minimis* Thresholds (Where Applicable) and to Quantities below Applicable SJVAPCD**
 21 **CEQA Thresholds for Other Pollutants**

22 Please see Mitigation Measure AQ-4b under Impact AQ-4 in the discussion of Alternative 1A.

23 **Impact AQ-5: Generation of Criteria Pollutants in Excess of the SMAQMD Regional Thresholds**
 24 **from Operation and Maintenance of the Proposed Water Conveyance Facility**

25 **NEPA Effects:** Alternative 9 would not construct any permanent features in the SMAQMD that would
 26 require routine operations and maintenance activities. No operational emissions would be
 27 generated in the SMAQMD. Consequently, operation of Alternative 9 would neither exceed the
 28 SMAQMD regional thresholds of significance nor result in an adverse effect to air quality.

29 **CEQA Conclusion:** Alternative 9 would not construct any permanent features in the SMAQMD that
 30 would require routine operations and maintenance. No operational emissions would be generated
 31 in the SMAQMD. Consequently, operation of Alternative 9 would not contribute to or worsen
 32 existing air quality conditions in the SMAQMD. This impact would be less than significant. No
 33 mitigation is required.

34 **Impact AQ-6: Generation of Criteria Pollutants in Excess of the YSAQMD Regional Thresholds**
 35 **from Operation and Maintenance of the Proposed Water Conveyance Facility**

36 **NEPA Effects:** Alternative 9 would not construct any permanent features in the YSAQMD that would
 37 require routine operations and maintenance. No operational emissions would be generated in the
 38 YSAQMD. Consequently, operation of Alternative 9 would neither exceed the YSAQMD regional
 39 thresholds of significance nor result in an adverse effect on air quality.

1 **CEQA Conclusion:** Alternative 9 would not construct any permanent features in the YSAQMD that
 2 would require routine operations and maintenance. No operational emissions would be generated
 3 in the YSAQMD. Consequently, operation of Alternative 9 would not contribute to or worsen existing
 4 air quality conditions in the YSAQMD. This impact would be less than significant. No mitigation is
 5 required.

6 **Impact AQ-7: Generation of Criteria Pollutants in Excess of the BAAQMD Thresholds from**
 7 **Operation and Maintenance of the Proposed Water Conveyance Facility**

8 **NEPA Effects:** Alternative 9 would not construct any permanent features in the BAAQMD that would
 9 require routine operations and maintenance. No operational emissions would be BAAQMD in the
 10 BAAQMD. Consequently, operation of Alternative 9 would neither exceed the BAAQMD regional
 11 thresholds of significance nor result in an adverse effect to air quality.

12 **CEQA Conclusion:** Alternative 9 would not construct any permanent features in the BAAQMD that
 13 would require routine operations and maintenance. No operational emissions would be generated
 14 in the BAAQMD. Consequently, operation of Alternative 9 would not contribute to or worsen existing
 15 air quality conditions in the BAAQMD. This impact would be less than significant. No mitigation is
 16 required.

17 **Impact AQ-8: Generation of Criteria Pollutants in Excess of the SJVAPCD Thresholds from**
 18 **Operation and Maintenance of the Proposed Water Conveyance Facility**

19 **NEPA Effects:** Operations and maintenance include both routine activities and major inspections.
 20 Daily The highest concentration of operational emissions in the SJVAPCD is expected at the fish
 21 screen and operable barrier locations. As shown in Table 22-142, operation and maintenance
 22 activities under Alternative 9 would not exceed SJVAPCD's regional thresholds of significance and
 23 there would be no adverse effect (see Table 22-8). Accordingly, project operations would not
 24 contribute to or worsen existing air quality exceedances. There would be no adverse effect.

25 **CEQA Conclusion:** Emissions generated during operation and maintenance activities would not
 26 exceed SJVAPCD regional thresholds for criteria pollutants. SJVAPCD's regional emissions thresholds
 27 (Table 22-8) have been adopted to ensure projects do not hinder attainment of the CAAQS. The
 28 impact of generating emissions in excess of local air district would therefore violate applicable air
 29 quality standards in the Study area and could contribute to or worsen an existing air quality
 30 conditions. Because project operations would not exceed SJVAPCD regional thresholds, the impact
 31 would be less than significant.

32 **Impact AQ-9: Exposure of Sensitive Receptors to Health Hazards from Localized Particulate**
 33 **Matter in Excess of SMAQMD's Health-Based Concentration Thresholds**

34 **NEPA Effects:** As shown in Table 22-141, construction would increase PM10 and PM2.5 emissions in
 35 SMAQMD, which may pose inhalation-related health risks for receptors exposed to certain
 36 concentrations.

37 PM2.5 and PM10 concentrations at sensitive receptors locations were assessed using the EPA's
 38 AERMOD dispersion. The methodology described in Section 22.3.1.3 provides a more detailed
 39 summary of the approach used to conduct the analysis. Appendix 22C, *Bay Delta Conservation Plan*
 40 *Air Dispersion Modeling and Health Risk Assessment for Construction Emissions*, provides an in-depth
 41 discussion of the methodology and results.

1 Table 22-143 shows the highest predicted annual and daily (24-hour) PM10 and PM2.5
2 concentrations in SMAQMD. Exceedances from air district thresholds are shown in underline.

3 **Table 22-143. Alternative 9 PM10 and PM2.5 Concentration Results in SMAQMD**

Parameter	PM10		PM2.5	
	Annual ($\mu\text{g}/\text{m}^3$)	24-Hour ($\mu\text{g}/\text{m}^3$)	Annual ($\mu\text{g}/\text{m}^3$)	24-Hour ($\mu\text{g}/\text{m}^3$)
Maximum Value	<u>2.9</u>	<u>131</u>	0.45	21
<i>SMAQMD Threshold</i>	1	2.5	0.6	-

Appendix 22C, *Bay Delta Conservation Plan Air Dispersion Modeling and Health Risk Assessment for Construction Emissions*, includes modeling results for all receptors.
 $\mu\text{g}/\text{m}^3$ = micrograms per cubic meter

4
5 As shown in Table 22-143, all estimated annual PM2.5 concentrations would be less than SMAQMD's
6 annual thresholds. However, both the annual and maximum predicted 24-hour PM10 threshold
7 exceeds SMAQMD's thresholds. Exceedances of the annual threshold would occur at 17 receptor
8 locations near the intake work areas, while exceedances of the 24-hour threshold would occur at
9 435 receptor locations near intakes. The 24-hour exceedances would be temporary and occur
10 intermittently due to equipment use, soil disturbance, and meteorological conditions.

11 As discussed above, DWR has identified several environmental commitments to reduce
12 construction-related particulate matter in the SMAQMD (see Appendix 3B, *Environmental*
13 *Commitments*). While these commitments will reduce localized particulate matter emissions,
14 concentrations at the analyzed receptor locations would still exceed SMAQMD's PM10 thresholds.
15 The receptors exposed to PM10 concentrations in excess of SMAQMD's threshold could experience
16 increased risk for adverse human health effects. Mitigation Measure AQ-9 is available to address this
17 effect.

18 **CEQA Conclusion:** Respirable particulates pose human health hazard by bypassing the defenses
19 within the mucous ciliary system and entering deep lung tissue. Construction of Alternative 9 would
20 result in PM10 concentrations at receptor locations that are above the significance thresholds
21 established by the SMAQMD. As such, localized particulate matter concentrations at analyzed
22 receptors would result in significant human health impacts. Mitigation Measure AQ-9 outlines a
23 tiered strategy to reduce PM10 concentrations and public exposure to a less-than-significant level.

24 **Mitigation Measure AQ-9: Implement Measures to Reduce Re-Entrained Road Dust and**
25 **Receptor Exposure to PM2.5 and PM10**

26 Please see Mitigation Measure AQ-9 under Impact AQ-9 in the discussion of Alternative 1A.

27 **Impact AQ-10: Exposure of Sensitive Receptors to Health Hazards from Localized Particulate**
28 **Matter in Excess of YSAQMD's Health-Based Concentration Thresholds**

29 **NEPA Effects:** Construction of Alternative 9 would occur in the SMAQMD, SJVAPCD, and BAAQMD.
30 No construction emissions would be generated in the YSAQMD. Consequently, Alternative 9 would
31 not expose receptors to increased health risks from localized particulate matter since there would
32 be no emissions. There would be no adverse effect.

1 **CEQA Conclusion:** Construction of Alternative 9 would occur in the SMAQMD, SJVAPCD, and
 2 BAAQMD. No construction emissions would be generated in the YSAQMD. Consequently, Alternative
 3 1C would not expose receptors to increased health risks from localized particulate matter since
 4 there would be no emissions. This impact would be less than significant. No mitigation is required.

5 **Impact AQ-11: Exposure of Sensitive Receptors to Health Hazards from Localized Particulate**
 6 **Matter in Excess of BAAQMD's Health-Based Concentration Thresholds**

7 **NEPA Effects:** As shown in Table 22-141, construction would increase PM10 and PM2.5 emissions in
 8 BAAQMD, which may pose inhalation-related health risks for receptors exposed to certain
 9 concentrations.

10 PM2.5 and PM10 concentrations at sensitive receptors locations were assessed using the EPA's
 11 AERMOD dispersion. The methodology described in Section 22.3.1.3 provides a more detailed
 12 summary of the approach used to conduct the analysis. Appendix 22C, *Bay Delta Conservation Plan*
 13 *Air Dispersion Modeling and Health Risk Assessment for Construction Emissions*, provides an in-depth
 14 discussion of the methodology and results.

15 As shown in Table 22-144, maximum predicted PM2.5 concentrations are less than BAAQMD's
 16 adopted threshold. The project would also implement all air district recommended onsite fugitive
 17 dust controls, such as regular watering. Accordingly, this alternative's effect of exposure of sensitive
 18 receptors to localized particulate matter concentrations would not be adverse.

19 **Table 22-144. Alternative 9 PM10 and PM2.5 Concentration Results in BAAQMD**

Parameter	PM10		PM2.5	
	Annual ($\mu\text{g}/\text{m}^3$)	24-Hour ($\mu\text{g}/\text{m}^3$)	Annual ($\mu\text{g}/\text{m}^3$)	24-Hour ($\mu\text{g}/\text{m}^3$)
Maximum Value	0.2	18	0.05	4.00
<i>BAAQMD Threshold</i>	-	-	0.3	-

Appendix 22C, *Bay Delta Conservation Plan Air Dispersion Modeling and Health Risk Assessment for Construction Emissions*, includes modeling results for all receptors.
 $\mu\text{g}/\text{m}^3$ = micrograms per cubic meter

20
 21 **CEQA Conclusion:** Respirable particulates pose human health hazard by bypassing the defenses
 22 within the mucous ciliary system and entering deep lung tissue. Construction of Alternative 9 would
 23 result in PM2.5 and PM10 concentrations at receptor locations that are below the significance
 24 thresholds established by the BAAQMD. As such, localized particulate matter concentrations at
 25 analyzed receptors would not result in significant human health impacts. No mitigation is required.

26 **Impact AQ-12: Exposure of Sensitive Receptors to Health Hazards from Localized Particulate**
 27 **Matter in Excess of SJVAPCD's Health-Based Concentration Thresholds**

28 **NEPA Effects:** As shown in Table 22-141, construction would increase PM10 and PM2.5 emissions in
 29 SJVAPCD, which may pose inhalation-related health risks for receptors exposed to certain
 30 concentrations.

31 PM2.5 and PM10 concentrations at sensitive receptors locations were assessed using the EPA's
 32 AERMOD dispersion. The methodology described in Section 22.3.1.3 provides a more detailed
 33 summary of the approach used to conduct the analysis. Appendix 22C, *Bay Delta Conservation Plan*

1 *Air Dispersion Modeling and Health Risk Assessment for Construction Emissions*, provides an in-depth
2 discussion of the methodology and results.

3 As shown in Table 22-145, maximum predicted annual PM2.5 concentrations and annual PM10
4 concentrations are less than SJVAPCD's adopted thresholds. However, the maximum predicted 24-
5 hour PM2.5 and PM10 concentrations would exceed the SJVAPCD's threshold. Exceedances of the
6 PM2.5 24-hour threshold would occur at six receptor locations. The exceedances of the PM10 24-
7 hour threshold would occur at 24 locations. The 24-hour exceedances would be temporary and
8 occur intermittently due to equipment use, soil disturbance, and meteorological conditions.

9 As discussed above, DWR has identified several environmental commitments to reduce
10 construction-related particulate matter in the SJVAPCD (see Appendix 3B, *Environmental*
11 *Commitments*). While these commitments will reduce localized particulate matter emissions,
12 concentrations at the receptor locations would still exceed SJVAPCD's 24-hour PM2.5 and PM10
13 threshold. The receptors exposed to PM2.5 and PM10 concentrations in excess of SJVAPCD's
14 threshold could experience increased risk for adverse human health effects. Mitigation Measure AQ-
15 9 is available to address this effect.

16 **Table 22-145. Alternative 9 PM10 and PM2.5 Concentration Results in SJVAPCD**

Parameter	PM10		PM2.5	
	Annual ($\mu\text{g}/\text{m}^3$)	24-Hour ($\mu\text{g}/\text{m}^3$)	Annual ($\mu\text{g}/\text{m}^3$)	24-Hour ($\mu\text{g}/\text{m}^3$)
Maximum Value	0.11	<u>25.8</u>	0.02	<u>18.3</u>
<i>SJVAPCD Threshold</i>	<i>2.08</i>	<i>10.4</i>	<i>2.08</i>	<i>10.4</i>

Appendix 22C, *Bay Delta Conservation Plan Air Dispersion Modeling and Health Risk Assessment for Construction Emissions*, includes modeling results for all receptors.
 $\mu\text{g}/\text{m}^3$ = micrograms per cubic meter

17
18 **CEQA Conclusion:** Respirable particulates pose human health hazard by bypassing the defenses
19 within the mucous ciliary system and entering deep lung tissue. Construction of Alternative 9 would
20 result in PM2.5 and PM10 concentrations at six and 24 receptor locations, respectively, that are
21 above the significance thresholds established by the SJVAPCD. As such, localized particulate matter
22 concentrations at analyzed receptors would result in significant human health impacts. Mitigation
23 Measure AQ-9 outlines a tiered strategy to reduce PM2.5 and PM10 concentrations and public
24 exposure to a less-than-significant level.

25 **Mitigation Measure AQ-9: Implement Measures to Reduce Re-Entrained Road Dust and**
26 **Receptor Exposure to PM2.5 and PM10**

27 Please see Mitigation Measure AQ-9 under Impact AQ-9 in the discussion of Alternative 1A.

28 **Impact AQ-13: Exposure of Sensitive Receptors to Health Hazards from Localized Carbon**
29 **Monoxide**

30 **NEPA Effects:** Continuous engine exhaust may elevate localized CO concentrations. Receptors
31 exposed to these CO "hot-spots" may have a greater likelihood of developing adverse health effects
32 (as described in Section 22.1.2). CO hot-spots are typically observed at heavily congested
33 intersections where a substantial number of gasoline-powered vehicles idle for prolonged durations
34 throughout the day. Construction sites are less likely to result in localized CO hot-spots due to the

1 nature of construction activities (Sacramento Metropolitan Air Quality Management District 2014),
 2 which normally utilize diesel-powered equipment for intermittent or short durations. Moreover,
 3 construction sites must comply with the Occupational Safety and Health Administration's (OSHA) CO
 4 exposure standards for onsite workers. Unlike regional pollutants (e.g., ROG and NO_x), CO
 5 concentrations also dissipate as a function of distance and will therefore be lower at offsite receptor
 6 locations. Accordingly, given that construction activities typically do not result in CO hot-spots,
 7 onsite concentrations must comply with OSHA standards, and CO levels dissipate as a function of
 8 distance, equipment-generated CO emissions (see Table 22-141) are not anticipated to result in
 9 adverse health hazards to sensitive receptors.

10 Construction traffic may contribute to increased roadway congestion, which could lead to conditions
 11 conducive to CO hot-spot formation. As shown in Table 19-32, the highest peak hour traffic volumes
 12 under BPBGPP—10,657 vehicles per hour—on westbound Interstate 80 between Suisun Valley
 13 Road and State Route 12. This is about half of the congested traffic volume modeled by BAAQMD
 14 (24,000 vehicles per hour) that would be needed to contribute to a localized CO hot-spot, and less
 15 than half of the traffic volume modeled by SMAQMD (31,600 vehicles per hour). The BAAQMD's and
 16 SMAQMD's CO screening criteria were developed based on County average vehicle fleets that are
 17 primarily comprised of gasoline vehicles. Construction vehicles would be predominantly diesel
 18 trucks, which generate fewer CO emissions per idle-hour and vehicle mile traveled than gasoline-
 19 powered vehicles. Accordingly, the air district screening thresholds provide a conservative
 20 evaluation threshold for the assessment of potential CO emissions impacts during construction.

21 Based on the above analysis, even if all vehicles on the modeled traffic segment drove through the
 22 same intersection in the peak hour, CO concentrations adjacent to the traveled way would not
 23 exceed the CAAQS or NAAQS according to BAAQMD's and SMAQMD's screening criteria. Thus,
 24 construction traffic is not anticipated to result in adverse health hazards to sensitive receptors.

25 **CEQA Conclusion:** Continuous engine exhaust may elevate localized CO concentrations. Receptors
 26 exposed to these CO "hot-spots" may have a greater likelihood of developing adverse health effects.
 27 Construction sites are less likely to result in localized CO hot-spots due to the nature of construction
 28 activities (Sacramento Metropolitan Air Quality Management District 2014), which normally utilize
 29 diesel-powered equipment for intermittent or short durations. Moreover, construction sites must
 30 comply with the OSHA CO exposure standards for onsite workers. Accordingly, given that
 31 construction activities typically do not result in CO hot-spots, onsite concentrations must comply
 32 with OSHA standards, and CO levels dissipate as a function of distance, equipment-generated CO
 33 emissions are not anticipated to result in significant health hazards to sensitive receptors. Similarly,
 34 peak-hour construction traffic on local roadways would not exceed BAAQMD's or SMAQMD's
 35 conservative screening criteria for the formation potential CO hot-spots. This impact would be less
 36 than significant. No mitigation is required.

37 **Impact AQ-14: Exposure of Sensitive Receptors to Health Hazards from Diesel Particulate** 38 **Matter in Excess of SMAQMD's Chronic Non-Cancer and Cancer Risk Thresholds**

39 **NEPA Effects:** As shown in Table 22-141, construction of Alternative 9 would increase DPM
 40 emissions in SMAQMD, particularly near sites involving the greatest duration and intensity of
 41 construction activities. DPM poses inhalation-related chronic non-cancer hazard and cancer risks if
 42 adjacent receptors are exposed to significant DPM concentrations for prolonged durations.

43 Receptor exposure to construction DPM emissions was assessed by predicting the health risks in
 44 terms of excess cancer and non-cancer hazard impacts using the EPA's AERMOD dispersion

1 modeling and guidance published by OEHHA. Based on HRA results detailed in Appendix 22C, *Bay*
 2 *Delta Conservation Plan Air Dispersion Modeling and Health Risk Assessment for Construction*
 3 *Emissions*, Alternative 9 would not exceed the SMAQMD's thresholds for chronic non-cancer hazard;
 4 however, it would exceed SMAQMD's cancer risk threshold (see Table 22-146). A total of 52
 5 sensitive receptor locations were found to exceed the cancer risk threshold of 10 per million.

6 As discussed above, DWR has identified several environmental commitments to reduce
 7 construction-related diesel particulate matter in the SMAQMD (see Appendix 3B, *Environmental*
 8 *Commitments*). While these commitments will reduce localized diesel particulate matter emissions,
 9 cancer risk levels were found to exceed the significance threshold at some of the analyzed receptors
 10 and those locations could experience increased risk for adverse human health effects.

11 Mitigation Measure AQ-16 would be available to reduce exposure to substantial cancer risk by
 12 relocating affected receptors. Although Mitigation Measure AQ-16 would reduce the severity of this
 13 effect, the BDCP proponents are not solely responsible for implementation of the measure. If a
 14 landowner chooses not to accept DWR's offer of relocation assistance, an adverse effect in the form
 15 excess cancer risk above air district thresholds would occur. Therefore, this effect would be adverse.
 16 If, however, all landowners accept DWR's offer of relocation assistance, effects would not be
 17 adverse.

18 **CEQA Conclusion:** DPM generated during construction poses inhalation-related chronic non-cancer
 19 hazard and cancer risk if adjacent receptors are exposed to significant concentrations for prolonged
 20 durations. DPM generated during Alternative 9 construction would not exceed the SMAQMD's
 21 chronic non-cancer hazard threshold. However, a total of 52 sensitive receptor locations would be
 22 exposed to substantial pollutant concentrations. Therefore, this impact for DPM emissions would be
 23 significant.

24 Mitigation Measure AQ-16 would be available to reduce exposure to substantial cancer risk by
 25 relocating affected receptors. Although Mitigation Measure AQ-16 would reduce the severity of this
 26 effect, the BDCP proponents are not solely responsible for implementation of the measure. If a
 27 landowner chooses not to accept DWR's offer of relocation assistance, a significant impact in the
 28 form excess cancer risk above air district thresholds would occur. Therefore, this effect would be
 29 significant and unavoidable. If, however, all landowners accept DWR's offer of relocation assistance,
 30 the impact would be less than significant.

31 **Mitigation Measure AQ-16: Relocate Sensitive Receptors to Avoid Excess Cancer Risk**

32 Please see Mitigation Measure AQ-16 under Impact AQ-16 in the discussion of Alternative 1A.

33 **Table 22-146. Alternative 9 Health Hazards in the Sacramento Metropolitan Air Quality**
 34 **Management District**

Parameter	Chronic Health Hazard	Cancer Health Risk
Maximum Value at MEI	0.019	<u>57 per million</u>
Thresholds	1	10 per million

Source: Appendix 22C, *Bay Delta Conservation Plan Air Dispersion Modeling and Health Risk Assessment for Construction Emissions*.

MEI = maximally exposed individual.

1 **Impact AQ-15: Exposure of Sensitive Receptors to Health Hazards from Diesel Particulate**
 2 **Matter in Excess of YSAQMD's Chronic Non-Cancer and Cancer Risk Thresholds**

3 **NEPA Effects:** Construction of Alternative 9 would occur in the SMAQMD, SJVAPCD, and BAAQMD.
 4 No construction emissions would be generated in the YSAQMD. Consequently, Alternative 9 would
 5 not expose receptors to increased health risks from DPM since there would be no emissions. There
 6 would be no adverse effect.

7 **CEQA Conclusion:** Construction of Alternative 9 would occur in the SMAQMD, SJVAPCD, and
 8 BAAQMD. No construction emissions would be generated in the YSAQMD. Consequently, Alternative
 9 1C would not expose receptors to increased health risks from DPM since there would be no
 10 emissions. This impact would be less than significant. No mitigation is required.

11 **Impact AQ-16: Exposure of Sensitive Receptors to Health Hazards from Diesel Particulate**
 12 **Matter in Excess of BAAQMD's Chronic Non-Cancer and Cancer Risk Thresholds**

13 **NEPA Effects:** As shown in Table 22-141, construction would increase DPM emissions in the
 14 BAAQMD, particularly near sites involving the greatest duration and intensity of construction
 15 activities. DPM poses inhalation-related chronic non-cancer hazard and cancer risks if adjacent
 16 receptors are exposed to significant DPM concentrations for prolonged durations.

17 Receptor exposure to construction DPM emissions was assessed by predicting the health risks in
 18 terms of excess cancer and non-cancer hazard impacts using the EPA's AERMOD dispersion
 19 modeling and guidance published by OEHHA. Based on the HRA results detailed in Appendix 22C,
 20 *Bay Delta Conservation Plan Air Dispersion Modeling and Health Risk Assessment for Construction*
 21 *Emissions*, Alternative 9 would not exceed the BAAQMD's chronic non-cancer hazard or cancer risk
 22 thresholds (see Table 22-147). Therefore, this alternative's effect of exposure of sensitive receptors
 23 to health hazards during construction would not be adverse.

24 **CEQA Conclusion:** DPM generated during construction poses inhalation-related chronic non-cancer
 25 hazard and cancer risk if adjacent receptors are exposed to significant concentrations for prolonged
 26 durations. The DPM generated during Alternative 9 construction would not exceed the BAAQMD's
 27 chronic non-cancer or cancer thresholds, and thus would not expose sensitive receptors to
 28 substantial pollutant concentrations. Therefore, this impact for DPM health hazards would be less
 29 than significant. No mitigation is required.

30 **Table 22-147. Alternative 9 Health Hazards from DPM Exposure in the Bay Area Air Quality**
 31 **Management District**

Parameter	Chronic Health Hazard	Cancer Health Risk
Maximum Value at MEI	0.003	8 per million
BAAQMD Thresholds	1	10 per million

Source: Appendix 22C, *Bay Delta Conservation Plan Air Dispersion Modeling and Health Risk Assessment for Construction Emissions*.

MEI = maximally exposed individual.

32

1 **Impact AQ-17: Exposure of Sensitive Receptors to Health Hazards from Diesel Particulate**
 2 **Matter in Excess of SJVAPCD's Chronic Non-Cancer and Cancer Risk Thresholds**

3 **NEPA Effects:** As shown in Table 22-141, construction would increase DPM emissions in the
 4 SJVAPCD, particularly near sites involving the greatest duration and intensity of construction
 5 activities. DPM poses inhalation-related chronic non-cancer hazard and cancer risks if adjacent
 6 receptors are exposed to significant DPM concentrations for prolonged durations.

7 Receptor exposure to construction DPM emissions was assessed by predicting the health risks in
 8 terms of excess cancer and non-cancer hazard impacts using the EPA's AERMOD dispersion
 9 modeling and guidance published by OEHHA. Based on HRA results detailed in Appendix 22C, *Bay*
 10 *Delta Conservation Plan Air Dispersion Modeling and Health Risk Assessment for Construction*
 11 *Emissions*, Alternative 9 would not exceed the SJVAPCD's chronic non-cancer or cancer risk
 12 thresholds (Table 22-148) and, thus, would not expose sensitive receptors to substantial risk from
 13 pollutant concentrations. Therefore, this alternative's effect of exposure of sensitive receptors to
 14 DPM emissions and their health hazards during construction would not be adverse.

15 **CEQA Conclusion:** DPM generated during construction poses inhalation-related chronic non-cancer
 16 hazard and cancer risk if adjacent receptors are exposed to significant concentrations for prolonged
 17 durations. The DPM generated during Alternative 9 construction would not exceed the SJVAPCD's
 18 chronic non-cancer or cancer thresholds, and thus would not expose sensitive receptors to
 19 substantial pollutant concentrations. Therefore, this impact for DPM health hazards would be less
 20 than significant. No mitigation is required.

21 **Table 22-148. Alternative 9 Health Hazards in the San Joaquin Valley Air Pollution Control District**

Alternative 9	Chronic Health Hazard	Cancer Health Risk
Maximum Value at MEI	0.003	<u>11 per million</u>
BAAQMD Thresholds	1	10 per million

Source: Appendix 22C, *Bay Delta Conservation Plan Air Dispersion Modeling and Health Risk Assessment for Construction Emissions*.
 MEI = maximally exposed individual.

Parameter	Chronic Health Hazard	Cancer Health Risk
Maximum Value at MEI	0.001	4 per million
SJVAPCD Thresholds	1	10 per million

Source: Appendix 22C, *Bay Delta Conservation Plan Air Dispersion Modeling and Health Risk Assessment for Construction Emissions*.
 MEI = maximally exposed individual.

23
 24 **Impact AQ-18: Exposure of Sensitive Receptors to *Coccidioides immitis* (Valley Fever)**

25 **NEPA Effects:** As discussed under Alternative 1A, earthmoving activities during construction could
 26 release *C. immitis* spores if filaments are present and other soil chemistry and climatic conditions
 27 are conducive to spore development. Receptors adjacent to the construction area may therefore be
 28 exposed to increase risk of inhaling *C. immitis* spores and subsequent development of Valley Fever.
 29 Dust-control measures are the primary defense against infection (United States Geological Survey
 30 2000). Implementation of advanced air-district recommended fugitive dust controls outlined in

1 Appendix 3B, *Environmental Commitments*, would avoid dusty conditions and reduce the risk of
 2 contracting Valley Fever through routine watering and other controls. Therefore, this alternative's
 3 effect of exposure of sensitive receptors to increased Valley Fever risk during construction would
 4 not be adverse.

5 **CEQA Conclusion:** Construction of the water conveyance facility would involve earthmoving
 6 activities that could release *C. immitis* spores if filaments are present and other soil chemistry and
 7 climatic conditions are conducive to spore development. Receptors adjacent to the construction area
 8 may therefore be exposed to increase risk of inhaling *C. immitis* spores and subsequent development
 9 of Valley Fever. Implementation of air-district recommended fugitive dust controls outlined in
 10 Appendix 3B, *Environmental Commitments*, would avoid dusty conditions and reduce the risk of
 11 contracting Valley Fever through routine watering and other controls. Therefore, this impact would
 12 be less than significant. No mitigation is required.

13 **Impact AQ-19: Creation of Potential Odors Affecting a Substantial Number of People during**
 14 **Construction or Operation of the Proposed Water Conveyance Facility**

15 **NEPA Effects:** As discussed under Alternative 1A, odors from construction activities would be
 16 localized and generally confined to the immediate area surrounding the construction site. Moreover,
 17 odors would be temporary and localized, and they would cease once construction activities have
 18 been completed. Thus, it is not anticipated that construction of CM1 would create objectionable
 19 odors from construction equipment or asphalt paving.

20 Construction of the water conveyance facility would require removal of subsurface material during
 21 tunnel excavation and sediment removal. As discussed under Alternative 1A, geotechnical tests
 22 indicate that VOC levels in Plan Area soils are below the method detection limits, indicating that
 23 organic decay of exposed RTM and sediment will be relatively low (URS 2014). Moreover, drying
 24 and stockpiling of the removed RTM and sediment will occur under aerobic conditions, which will
 25 further limit any potential decomposition and associated malodorous products. Accordingly, it is not
 26 anticipated that tunnel and sediment excavation would create objectionable odors.

27 Typical facilities known to produce odors include landfills, wastewater treatment plants, food
 28 processing facilities, and certain agricultural activities. Alternative 9 would not result in the addition
 29 of facilities associated with odors, and as such, long-term operation of the water conveyance facility
 30 would not result in objectionable odors.

31 **CEQA Conclusion:** Alternative 9 would not result in the addition of major odor producing facilities.
 32 Diesel emissions during construction could generate temporary odors, but these would quickly
 33 dissipate and cease once construction is completed. Likewise, potential odors generated during
 34 asphalt paving would be addressed through mandatory compliance with air district rules and
 35 regulations. While tunnel excavation would unearth substantial quantities of RTM, geotechnical
 36 tests indicate that soils in the Plan Area have relatively low organic constituents. Moreover, drying
 37 and stockpiling of the removed RTM will occur under aerobic conditions, which will further limit
 38 any potential decomposition and associated malodorous products. Accordingly, the impact of
 39 exposure of sensitive receptors to potential odors during construction would be less than
 40 significant. No mitigation is required.

1 **Impact AQ-20: Generation of Criteria Pollutants in the Excess of Federal *De Minimis***
 2 **Thresholds from Construction and Operation and Maintenance of the Proposed Water**
 3 **Conveyance Facility**

4 **NEPA Effects:** EPA's General Conformity Rule (40 CFR Parts 51 and 93) only applies to Federal
 5 actions that are taken in EPA-designated "nonattainment" or "maintenance" areas. Accordingly, as
 6 outlined in Section III.A of the General Conformity Rule, "only actions which cause emissions in
 7 designated nonattainment and maintenance areas are subject to the regulations". Criteria pollutant
 8 emissions resulting from construction and operation of Alternative 9 in the SFNA, SJVAB, and
 9 SFBAAB are presented in Table 22-149. Exceedances of the federal *de minimis* thresholds are shown
 10 in underlined text.

11 **Sacramento Federal Nonattainment Area**

12 As shown in Table 22-149, implementation of Alternative 9 would exceed the following SFNA
 13 federal *de minimis* thresholds:

- 14 ● ROG: 2023–2025
- 15 ● NO_x: 2022–2028
- 16 ● PM10: 2023–2024

17 ROG and NO_x are precursors to ozone and NO_x is a precursor to PM, for which the SFNA is in
 18 nonattainment for the NAAQS. Sacramento County is also a maintenance area for the PM10 NAAQS.
 19 Since project emissions exceed the federal *de minimis* thresholds for ROG, NO_x, and PM10, a general
 20 conformity determination must be made to demonstrate that total direct and indirect emissions of
 21 NO_x, and PM10 would conform to the appropriate SFNA ozone SIP for each year of construction in
 22 which the *de minimis* thresholds are exceeded.

23 NO_x is also a precursor to PM and can contribute to PM formation. As discussed above, Sacramento
 24 County is currently designated maintenance for the PM10 NAAQS and portions of the SVAB are
 25 designated nonattainment for the PM2.5 NAAQS. NO_x emissions in excess of 100 tons per year in
 26 Sacramento County trigger a secondary PM10 precursor threshold, whereas NO_x emissions in excess
 27 of 100 tons per year in the SVAB trigger a secondary PM2.5 precursor threshold. Since NO_x
 28 emissions can contribute to PM formation, NO_x emissions in excess of these secondary precursor
 29 thresholds could conflict with the applicable PM10 and PM2.5 SIPs. Accordingly, NO_x offsets pursued
 30 for the purposes of general conformity for those years in which NO_x emissions exceed 100 tons must
 31 occur within the federally designated PM2.5 nonattainment and PM10 maintenance areas of the
 32 SVAB.

33 As shown in Table 22-141, NO_x emissions generated by construction activities in SMAQMD
 34 (Sacramento County) would exceed 100 tons per year between 2023 and 2027. The project
 35 therefore triggers the secondary PM10 precursor threshold, requiring all NO_x offsets for 2023
 36 through 2027 to occur within Sacramento County.

37 Given the magnitude of NO_x emissions and the limited geographic scope available for offsets in 2023
 38 through 2027 (Sacramento County), neither Mitigation Measures AQ-1a nor 1b could feasibly reduce

1 NO_x emissions to net zero for the purposes of general conformity.⁶³ This impact would be adverse.
 2 In the event that Alternative 9 is selected as the APA, Reclamation, USFWS, and NMFS would need to
 3 demonstrate that conformity is met for NO_x and secondary PM₁₀ formation through a local air
 4 quality modeling analysis (i.e., dispersion modeling) or other acceptable methods to ensure project
 5 emissions do not cause or contribute to any new violations of the NAAQS or increase the frequency
 6 or severity of any existing violations.

7 **Mitigation Measure AQ-1a: Mitigate and Offset Construction-Generated Criteria Pollutant**
 8 **Emissions within the SFNA to Net Zero (0) for Emissions in Excess of General Conformity**
 9 ***De Minimis* Thresholds (Where Applicable) and to Quantities below Applicable CEQA**
 10 **Thresholds for Other Pollutants**

11 Please see Mitigation Measure AQ-1a under Impact AQ-1 in the discussion of Alternative 1A.

12 **Mitigation Measure AQ-1b: Develop an Alternative or Complementary Offsite Mitigation**
 13 **Program to Mitigate and Offset Construction-Generated Criteria Pollutant Emissions**
 14 **within the SFNA to Net Zero (0) for Emissions in Excess of General Conformity *De Minimis***
 15 **Thresholds (Where Applicable) and to Quantities below Applicable CEQA Thresholds for**
 16 **Other Pollutants**

17 Please see Mitigation Measure AQ-1b under Impact AQ-1 in the discussion of Alternative 1A.

⁶³ The secondary PM precursor thresholds are triggered through the General Conformity Regulation (40 CFR 93.153 (a)(1)). Accordingly, confinement of the geographic scope for available offsets only applies to the General Conformity determination and does not influence mitigation feasibility for Impacts AQ-1 or AQ-28.

1 **Table 22-149. Criteria Pollutant Emissions from Construction and Operation of Alternative 9 in**
 2 **Nonattainment and Maintenance Areas of the SFNA, SJVAB, and SFBAAB (tons/year)**

Year	Sacramento Federal Nonattainment Area					
	ROG	NO _x ^a	CO ^b	PM10 ^c	PM2.5	SO ₂
2016	0	0	0	0	0	0
2017	<1	<1	<1	<1	<1	<1
2018	<1	<1	<1	3	1	<1
2019	4	24	<1	15	3	<1
2020	<1	<1	<1	2	<1	<1
2021	0	0	0	2	<1	0
2022	9	<u>70</u>	1	49	7	<1
2023	<u>39</u>	<u>311</u>	2	<u>107</u>	17	2
2024	<u>49</u>	<u>382</u>	1	<u>140</u>	23	3
2025	<u>25</u>	<u>195</u>	1	92	15	1
2026	24	<u>160</u>	1	77	13	1
2027	24	<u>177</u>	1	85	14	1
2028	6	<u>42</u>	1	25	4	<1
2029	0	0	0	0	0	0
ELT	0.00	0.00	0.00	0.00	0.00	0.00
LLT	0.00	0.00	0.00	0.00	0.00	0.00
<i>De Minimis</i>	25	25	100	100	100	100
Year	San Joaquin Valley Air Basin					
	ROG	NO _x ^a	CO ^b	PM10	PM2.5	SO ₂
2016	0	0	0	0	0	0
2017	0	0	0	0	0	0
2018	1	6	<1	5	1	<1
2019	2	<u>18</u>	<1	8	2	<1
2020	3	<u>25</u>	<1	9	2	<1
2021	3	<u>25</u>	<1	8	2	<1
2022	2	<u>16</u>	<1	7	1	<1
2023	9	<u>69</u>	1	25	5	<1
2024	9	<u>61</u>	1	29	5	<1
2025	1	8	<1	11	2	<1
2026	1	5	<1	10	2	<1
2027	1	8	<1	14	2	<1
2028	1	5	<1	5	1	<1
2029	0	0	0	0	0	0
ELT	0.06	0.36	0.75	0.12	0.04	<0.01
LLT	0.05	0.31	0.71	0.11	0.03	<0.01
<i>De Minimis</i>	10	10	100	100	100	100

Year	San Francisco Bay Area Air Basin					
	ROG	NO _x	CO ^b	PM10 ^d	PM2.5	SO ₂
2016	0	0	0	-	0	0
2017	<1	<1	<1	-	<1	<1
2018	1	5	0	-	1	<1
2019	7	49	0	-	4	<1
2020	4	38	0	-	3	<1
2021	5	39	0	-	2	<1
2022	3	27	1	-	2	<1
2023	5	47	5	-	5	<1
2024	5	44	5	-	6	<1
2025	1	12	4	-	3	<1
2026	1	13	4	-	3	<1
2027	1	11	4	-	4	<1
2028	<1	3	1	-	1	<1
2029	0	0	0	-	0	0
ELT	0.00	0.00	0.00	-	0.00	0.00
LLT	0.00	0.00	0.00	-	0.00	0.00
<i>De Minimis</i>	<i>100</i>	<i>100</i>	<i>100</i>	-	<i>100</i>	<i>100</i>

Notes

- ^a NO_x emissions in excess of 100 tons per year within federally designated PM10 and PM2.5 nonattainment or maintenance areas trigger a secondary PM10 and PM2.5 precursor threshold. NO_x emissions in excess of this secondary threshold could conflict with the applicable PM10 and PM2.5 SIPs. Accordingly, NO_x offsets pursued for the purposes of general conformity for those years in which NO_x emissions exceed 100 tons must occur within the federally designated PM2.5 nonattainment and PM10 maintenance areas, as applicable.
- ^b The proposed water conveyance facility is located within a federally designated CO attainment area. Accordingly, CO emissions generated by construction of CM1 are not subject to the General Conformity Rule and are excluded from the emissions summary and general conformity analysis (40 CFR Part 51 and 93, Section III.A). Emissions presented in the table are limited those generated by haul trucks, which would occur in federally designated CO maintenance area.
- ^c There are no federally designated PM10 maintenance areas in Yolo County. Accordingly, PM10 emissions generated by construction of CM1 in Yolo County are not subject to the General Conformity Rule and are excluded from the emissions summary and general conformity analysis for the SFNA (40 CFR Part 51 and 93, Section III.A). Emissions presented in the table are limited those generated within Sacramento County.
- ^d There are no federally designated PM10 nonattainment or maintenance areas in the SFBAAB. Accordingly, PM10 emissions generated by construction of CM1 are not subject to the General Conformity Rule and are excluded from the emissions summary and general conformity analysis (40 CFR Part 51 and 93, Section III.A).

1

2

San Joaquin Valley Air Basin

3

As shown in Table 22-149, implementation of Alternative 9 would exceed the following SJVAB federal *de minimis* thresholds:

4

5

- NO_x: 2019–2024

1 NO_x is a precursor to ozone and PM, for which the SJVAB is in nonattainment for the NAAQS. Since
 2 project emissions exceed the federal *de minimis* threshold for NO_x, a general conformity
 3 determination must be made to demonstrate that total direct and indirect emissions of NO_x would
 4 conform to the appropriate SJVAB SIP for each year of construction in which the *de minimis*
 5 thresholds are exceeded.

6 As shown in Appendix 22E, *General Conformity Determination*, Attachment 22E-1, SJVAPCD confirms
 7 that sufficient emissions reduction credits would be available to fully offset NO_x emissions in excess
 8 of the federal *de minimis* thresholds zero through implementation of Mitigation Measures AQ-4a and
 9 4b. Mitigation Measures AQ-4a and 4b will ensure the requirements of the mitigation and offset
 10 program are implemented and conformity requirements for NO_x are met, should Alternative 9 be
 11 selected as the APA.

12 **Mitigation Measure AQ-4a: Mitigate and Offset Construction-Generated Criteria Pollutant**
 13 **Emissions within SJVAPCD/SJVAB to Net Zero (0) for Emissions in Excess of General**
 14 **Conformity *De Minimis* Thresholds (Where Applicable) and to Quantities below**
 15 **Applicable SJVAPCD CEQA Thresholds for Other Pollutants**

16 Please see Mitigation Measure AQ-4a under Impact AQ-4 in the discussion of Alternative 1A.

17 **Mitigation Measure AQ-4b: Develop an Alternative or Complementary Offsite Mitigation**
 18 **Program to Mitigate and Offset Construction-Generated Criteria Pollutant Emissions**
 19 **within the SJVAPCD/SJVAB to Net Zero (0) for Emissions in Excess of General Conformity**
 20 ***De Minimis* Thresholds (Where Applicable) and to Quantities below Applicable SJVAPCD**
 21 **CEQA Thresholds for Other Pollutants**

22 Please see Mitigation Measure AQ-4b under Impact AQ-4 in the discussion of Alternative 1A.

23 ***San Francisco Bay Area Air Basin***

24 As shown in Table 22-149, implementation of Alternative 9 would not exceed any of the SFBAAB
 25 federal *de minimis* thresholds. Accordingly, a general conformity determination is not required as
 26 total direct and indirect emissions would conform to the appropriate SFBAAB SIPs.

27 ***CEQA Conclusion:*** SFNA and SJVAB are classified as nonattainment or maintenance areas with
 28 regard to the ozone and PM₁₀ NAAQS, and the impact of increases in criteria pollutant emissions
 29 above the air basin *de minimis* thresholds could conflict with or obstruct implementation of the
 30 applicable air quality plans. Since construction emissions in the SFNA and SJVAB would exceed the
 31 *de minimis* thresholds for ROG (SFNA only), NO_x, and PM₁₀ (SFNA only) this impact would be
 32 significant.

33 Mitigation Measures AQ-4a and AQ-4b would ensure project emissions would not result in an
 34 increase in regional NO_x in the SJVAB. These measures would therefore ensure total direct and
 35 indirect NO_x emissions generated by the project would conform to the appropriate SJVAB SIPs by
 36 offsetting the action's emissions in the same or nearby area to net zero. Accordingly, impacts would
 37 be less than significant with mitigation in the SJVAB.

38 Although Mitigation Measures AQ-1a and AQ-1b would reduce NO_x in the SFNA, given the magnitude
 39 of NO_x emissions and the limited geographic scope available for offsets (Sacramento County),
 40 neither measure could feasibly reduce NO_x emissions to net zero for the purposes of general
 41 conformity. This impact would be significant and unavoidable in the SFNA.

1 Emissions generated within the SFBAAB would not exceed the SFBAAB de minimis thresholds and
2 would therefore conform to the appropriate SFBAAB SIPs. No mitigation is required.

3 **Impact AQ-21: Generation of Cumulative Greenhouse Gas Emissions during Construction of**
4 **the Proposed Water Conveyance Facility**

5 **NEPA Effects:** GHG (CO₂, CH₄, N₂O, SF₆, and HFCs) emissions resulting from construction of
6 Alternative 9 are presented in Table 22-150. Emissions with are presented with implementation of
7 environmental commitments (see Appendix 3B, *Environmental Commitments*) and state mandates to
8 reduce GHG emissions. State mandates include the RPS, LCFS, and Pavley. These mandates do not
9 require additional action on the part of DWR, but will contribute to GHG emissions reductions. For
10 example, Pavley and LCFS will improve the fuel efficiency of vehicles and reduce the carbon content
11 of transportation fuels, respectively. Equipment used to construct the project will therefore be
12 cleaner and less GHG intensive than if the state mandates had not been established.

13 **Table 22-150. GHG Emissions from Construction of Alternative 9 (metric tons/year)^a**

Year	Equipment and Vehicles (CO ₂ e)	Electricity (CO ₂ e)	Concrete Batching (CO ₂)	Total CO ₂ e
2016	0	0	528	528
2017	102	0	0	102
2018	4,399	84	65,630	70,113
2019	34,699	472	10,308	45,479
2020	18,107	2,266	64,055	84,427
2021	18,447	6,032	127,047	151,526
2022	39,864	8,470	192,559	240,894
2023	140,547	7,540	188,002	336,089
2024	159,183	7,865	224,928	391,976
2025	75,994	5,306	150,196	231,495
2026	70,085	1,894	35,993	107,972
2027	68,168	362	51,907	120,436
2028	19,539	10	10,212	29,761
2029	0	0	0	0
<i>Total</i>	<i>649,135</i>	<i>40,300</i>	<i>1,121,364</i>	<i>1,810,799</i>

^a Emissions estimates do not account for GHG flux from land disturbance. Surface and subsurface (e.g., tunneling) activities may oxidize peat soils, releasing GHG emissions. However, recent geotechnical surveys indicated that peat is negligible below 80 feet of depth. The tunnel will be placed below this range and the design adjusted if peat soils are discovered. Peat material encountered during surface excavation for non-tunnel work will be covered with top soil to reduce oxidation when needed.

Values may not total correctly due to rounding.

14
15 Table 22-151 summarizes GHG emissions that would be generated in in the BAAQMD, SMAQMD, and
16 SJVAPCD (no construction emissions would be generated in the YSAQMD). The table does not
17 include emissions from electricity generation as these emissions would be generated by power
18 plants located throughout the state and the specific location of electricity-generating facilities is
19 unknown (see discussion preceding this impact analysis). Due to the global nature of GHGs, the

determination of effects is based on total emissions generated by construction (Table 22-150). GHG emissions presented in Table 22-144 are therefore provided for information purposes only.

Table 22-151. GHG Emissions from Construction of Alternative 9 by Air District (metric tons/year)^a

Year	Equipment and Vehicles (CO ₂ e)	Concrete Batching (CO ₂) ^a	Total CO ₂ e ^b
SMAQMD	408,605	373,788	782,393
SJVAPCD	84,245	373,788	458,033
BAAQMD	156,284	373,788	530,073

^a Emissions assigned to each air district based on the number of batching plants located in that air district.

^b Values may not total correctly due to rounding.

Construction of Alternative 9 would generate a total of 1.8 million metric tons of GHG emissions after implementation of environmental commitments and state mandates. This is equivalent to adding approximately 381,000 typical passenger vehicles to the road during construction (U.S. Environmental Protection Agency 2014e). As discussed in section 22.3.2, *Determination of Effects*, any increase in emissions above net zero associated with construction of the BDCP water conveyance features would be adverse. Accordingly, this effect would be adverse. Mitigation Measure AQ-21, which would develop a GHG Mitigation Program to reduce construction-related GHG emissions to net zero, is available address this effect.

CEQA Conclusion: Construction of Alternative 9 would generate a total of 1.8 million metric tons of GHG emissions. This is equivalent to adding approximately 381,000 typical passenger vehicles to the road during construction (U.S. Environmental Protection Agency 2014e). As discussed in section 22.3.2, *Determination of Effects*, any increase in emissions above net zero associated with construction of the BDCP water conveyance features would be significant. Mitigation Measure AQ-21 would develop a GHG Mitigation Program to reduce construction-related GHG emissions to net zero. Accordingly, this impact would be less-than-significant with implementation of Mitigation Measure AQ-21.

Mitigation Measure AQ-21: Develop and Implement a GHG Mitigation Program to Reduce Construction Related GHG Emissions to Net Zero (0)

Please see Mitigation Measure AQ-21 under Impact AQ-21 in the discussion of Alternative 1A.

Impact AQ-22: Generation of Cumulative Greenhouse Gas Emissions from Operation and Maintenance of the Proposed Water Conveyance Facility and Increased Pumping

NEPA Effects: Operation of Alternative 9 would generate direct and indirect GHG emissions. Sources of direct emissions include heavy-duty equipment, on road crew trucks, and employee vehicle traffic. Indirect emissions would be generated predominantly by electricity consumption required for pumping as well as, maintenance, lighting, and other activities.

Table 22-152 summarizes long-term operational GHG emissions associated with operations, maintenance, and increased SWP pumping. Emissions were quantified for both ELT and LLT conditions, although activities would take place annually until project decommissioning. Emissions include state targets to reduce GHG emissions (described in Impact AQ-21) are presented (there are no BDCP specific operational environmental commitments). Total CO₂e emissions are compared to

both the No Action Alternative (NEPA point of comparison) and Existing Conditions (CEQA baseline). As discussed in Section 22.3.1.2, equipment emissions are assumed to be zero under both the No Action Alternative (NEPA point of comparison) and Existing Conditions (CEQA baseline). The equipment emissions presented in Table 22-152 are therefore representative of project impacts for both the NEPA and CEQA analysis. All equipment emissions would be generated in SJVAPCD.

Table 22-152. GHG Emissions from Operation, Maintenance, and Increased SWP Pumping, Alternative 9 (metric tons/year)

Condition	Equipment CO ₂ e ^a	Electricity CO ₂ e		Total CO ₂ e	
		NEPA Point of Comparison	CEQA Baseline	NEPA Point of Comparison	CEQA Baseline
ELT	144	-	-78,282	-	-78,138
LLT	141	-1,753	-26,143	-1,613	-26,002

Note: The *NEPA point of comparison* compares total CO₂e emissions after implementation of Alternative 9 to the No Action Alternative, whereas the *CEQA baseline* compares total CO₂e emissions to Existing Conditions. Negative values represent a net GHG reduction.

^a All equipment emissions would occur in SJVAPCD.

SWP Operational and Maintenance GHG Emissions Analysis

Alternative 9 would not add any additional net electricity demand to operation of the SWP and would in fact result in a net reduction in electricity demand. Therefore, there will be no impact on SWP operational emissions. Alternative 9 would not add any permanent facilities that would substantially increase maintenance emissions. There would be no adverse effect.

CEQA Conclusion: Because BDCP Alternative 9 does not add additional electricity or substantial maintenance requirements to the SWP or CVP systems, BDCP Alternative 9 would have a less than significant impact with respect to GHG emissions. No mitigation is required.

Impact AQ-23: Generation of Cumulative Greenhouse Gas Emissions from Increased CVP Pumping as a Result of Implementation of CM1

NEPA Effects: As previously discussed, DWR's CAP cannot be used to evaluate environmental impacts associated with increased CVP pumping, as emissions associated with CVP are not under DWR's control and are not included in the CAP. Accordingly, GHG emissions resulting from increased CVP energy use are evaluated separately from GHG emissions generated as a result of SWP energy use.

Under Alternative 9, operation of the CVP yields the generation of clean, GHG emissions-free, hydroelectric energy. This electricity is sold into the California electricity market or directly to energy users. Analysis of the existing and future no action condition indicates that the CVP generates and will continue to generate all of the electricity needed to operate the CVP system and approximately 3,500 GWh of excess hydroelectric energy that would be sold to energy users throughout California.

Implementation of Alternative 9 is neither expected to require additional electricity over the No Action Alternative nor reduce the amount of excess CVP generation available for sale from the CVP to electricity users. The CVP is operated using energy generated at CVP hydroelectric facilities and

1 therefore results in no GHG emissions. Rather, implementation of Alternative 9 would reduce GHG
 2 emissions by 2,290 to 2,946 metric tons of CO₂e, relative to the No Action Alternative (depending on
 3 whether the RPS is assumed in the emissions calculations). Accordingly, there would be no adverse
 4 effect.

5 **CEQA Conclusion:** Implementation of Alternative 9 is neither expected to require additional
 6 electricity over Existing Conditions nor reduce the amount of excess CVP generation available for
 7 sale from the CVP to electricity users. All power supplied to CVP facilities would continue to be
 8 supplied by GHG emissions-free hydroelectricity and there would be no increase in GHG emissions
 9 over Existing Conditions as a result of CVP operations. The impact would be less than significant and
 10 no mitigation is required.

11 **Impact AQ-25: Generation of Regional Criteria Pollutants from Implementation of CM2–CM11**

12 **NEPA Effects:** Table 22-29 summarizes potential construction and operational emissions that may
 13 be generated by implementation of CM2–CM11. See the discussion of Impact AQ-24 under
 14 Alternative 1A.

15 Criteria pollutants from restoration and enhancement actions could exceed applicable general
 16 conformity *de minimis* levels and applicable local thresholds. The effect would vary according to the
 17 equipment used in construction of a specific conservation measure, the location, the timing of the
 18 actions called for in the conservation measure, and the air quality conditions at the time of
 19 implementation; these effects would be evaluated and identified in the subsequent project-level
 20 environmental analysis conducted for the CM2–CM11 restoration and enhancement actions. The
 21 effect of increases in emissions during implementation of CM2–CM11 in excess of applicable general
 22 conformity *de minimis* levels and air district thresholds (Table 22-8) could violate air basin SIPs and
 23 worsen existing air quality conditions. Mitigation Measure AQ-24 would be available to reduce this
 24 effect, but emissions would still be adverse.

25 **CEQA Conclusion:** Construction and operational emissions associated with the restoration and
 26 enhancement actions would result in a significant impact if the incremental difference, or increase,
 27 relative to Existing Conditions exceeds the applicable local air district thresholds shown in Table 22-
 28 8; these effects are expected to be further evaluated and identified in the subsequent project-level
 29 environmental analysis conducted for the CM2–CM11 restoration and enhancement actions.
 30 Mitigation Measure AQ-24 would be available to reduce this effect, but may not be sufficient to
 31 reduce emissions below applicable air quality management district thresholds (see Table 22-8).
 32 Consequently, this impact would be significant and unavoidable.

33 **Mitigation Measure AQ-24: Develop an Air Quality Mitigation Plan (AQMP) to Ensure Air** 34 **District Regulations and Recommended Mitigation are Incorporated into Future** 35 **Conservation Measures and Associated Project Activities**

36 Please see Mitigation Measure AQ-24 under Impact AQ-24 in the discussion of Alternative 1A.

37 **Impact AQ-25: Exposure of Sensitive Receptors to Health Hazards from Localized Particulate** 38 **Matter, Carbon Monoxide, and Diesel Particulate Matter from Implementation of CM2–CM11**

39 **NEPA Effects:** The potential for Alternative 9 to expose sensitive receptors increased health hazards
 40 from localized PM, CO, and DPM would be similar to Alternative 1A. Activities shown in Table 22-29
 41 with the greatest potential to have short or long-term air quality impacts are also anticipated to

1 have the greatest potential to expose receptors to substantial pollutant concentrations. The effect
 2 would vary according to the equipment used, the location and timing of the actions called for in the
 3 conservation measure, the meteorological and air quality conditions at the time of implementation,
 4 and the location of receptors relative to the emission source. Potential health effects would be
 5 evaluated and identified in the subsequent project-level environmental analysis conducted for the
 6 CM2–CM11 restoration and enhancement actions.

7 The effect of increases in PM, CO, or DPM (cancer and non-cancer-risk) in excess of applicable air
 8 district thresholds (Table 22-8) at receptor locations could result in adverse health impacts.
 9 Mitigation Measures AQ-24 and AQ-25 would be available to reduce this effect.

10 **CEQA Conclusion:** Construction and operational emissions associated with the restoration and
 11 enhancement actions under Alternative 9 would result in a significant impact if PM, CO, or DPM
 12 (cancer and non-cancer-risk) concentrations at receptor locations exceed the applicable local air
 13 district thresholds shown in Table 22-8; these effects are expected to be further evaluated and
 14 identified in the subsequent project-level environmental analysis conducted for the CM2–CM11
 15 restoration and enhancement actions. Mitigation Measures AQ-24 and AQ-25 would ensure localized
 16 concentrations at receptor locations would be below applicable air quality management district
 17 thresholds (see Table 22-8). Consequently, this impact would be less than significant.

18 **Mitigation Measure AQ-24: Develop an Air Quality Mitigation Plan (AQMP) to Ensure Air**
 19 **District Regulations and Recommended Mitigation are Incorporated into Future**
 20 **Conservation Measures and Associated Project Activities**

21 Please see Mitigation Measure AQ-24 under Impact AQ-24 in the discussion of Alternative 1A.

22 **Mitigation Measure AQ-25: Prepare a Project-Level Health Risk Assessment to Reduce**
 23 **Potential Health Risks from Exposure to Localized DPM and PM Concentrations**

24 Please see Mitigation Measure AQ-25 under Impact AQ-25 in the discussion of Alternative 1A.

25 **Impact AQ-26: Creation of Potential Odors Affecting a Substantial Number of People from**
 26 **Implementation of CM2–CM11**

27 **NEPA Effects:** The potential for Alternative 9 to expose sensitive receptors increased odors would
 28 be similar to Alternative 1A. Accordingly, construction activities associated with CM2-CM11 are not
 29 anticipated to result in nuisance odors. Similarly, while restored land uses associated with the
 30 program have the potential to generate odors from natural processes, the emissions would be
 31 similar in origin and magnitude to the existing land use types in the restored area (e.g., managed
 32 wetlands). Moreover, specific odor effects would be evaluated and identified in the subsequent
 33 project-level environmental analysis conducted for the CM2–CM11 restoration and enhancement
 34 actions. Accordingly, odor-related effects associated with CM2–CM11 would not be adverse.

35 **CEQA Conclusion:** Alternative 9 would not result in the addition of major odor producing facilities.
 36 Diesel emissions during construction could generate temporary odors, but these would quickly
 37 dissipate and cease once construction is completed. Increases in wetland, tidal, and upland habitats
 38 may increase the potential for odors from natural processes. However, the origin and magnitude of
 39 odors would be similar to the existing land use types in the restored area (e.g., managed wetlands).
 40 Moreover, specific odor impacts would be evaluated and identified in the subsequent project-level
 41 environmental analysis conducted for the CM2–CM11 restoration and enhancement actions.

1 Accordingly, the impact of exposure of sensitive receptors to potential odors would be less than
2 significant. No mitigation is required.

3 **Impact AQ-27: Generation of Cumulative Greenhouse Gas Emissions from Implementation of** 4 **CM2–CM11**

5 **NEPA Effects:** CM2–CM11 implemented under Alternative 9 would result in local GHG emissions
6 from construction equipment and vehicle exhaust. Restoration activities with the greatest potential
7 for emissions include those that break ground and require use of earthmoving equipment. The type
8 of restoration action and related construction equipment use are shown in Table 22-29.

9 Implementing CM2–CM11 would also affect long-term sequestration rates through land use changes,
10 such as conversion of agricultural land to wetlands, inundation of peat soils, drainage of peat soils,
11 and removal or planting of carbon-sequestering plants.

12 Without additional information on site-specific characteristics associated with each of the
13 restoration components, a complete assessment of GHG flux from CM2–CM11 is currently not
14 possible. The effect of carbon sequestration and CH₄ generation would vary by land use type, season,
15 and chemical and biological characteristics; these effects would be evaluated and identified in the
16 subsequent project-level environmental analysis conducted for the CM2–CM11 restoration and
17 enhancement actions. Mitigation Measures AQ-24 and AQ-27 would be available to reduce this
18 effect. However, due to the potential for increases in GHG emissions from construction and land use
19 change, this effect would be adverse.

20 **CEQA Conclusion:** The restoration and enhancement actions under Alternative 9 could result in a
21 significant impact if activities are inconsistent with applicable GHG reduction plans, do not
22 contribute to a lower carbon future, or generate excessive emissions, relative to other projects
23 throughout the state. These effects are expected to be further evaluated and identified in the
24 subsequent project-level environmental analysis conducted for the CM2–CM11 restoration and
25 enhancement actions. Mitigation Measures AQ-24 and AQ-27 would be available to reduce this
26 impact, but may not be sufficient to reduce to a less-than-significant level. Consequently, this impact
27 would be significant and unavoidable.

28 **Mitigation Measure AQ-24: Develop an Air Quality Mitigation Plan (AQMP) to Ensure Air** 29 **District Regulations and Recommended Mitigation are Incorporated into Future** 30 **Conservation Measures and Associated Project Activities**

31 Please see Mitigation Measure AQ-24 under Impact AQ-24 in the discussion of Alternative 1A.

32 **Mitigation Measure AQ-27: Prepare a Land Use Sequestration Analysis to Quantify and** 33 **Mitigate (as Needed) GHG Flux Associated with Conservation Measures and Associated** 34 **Project Activities**

35 Please see Mitigation Measure AQ-27 under Impact AQ-27 in the discussion of Alternative 1A.

36 **22.3.4 Cumulative Analysis**

37 **Assessment Methodology**

38 The air quality management agencies in the Study area have identified project-level thresholds to
39 evaluate impacts to air quality (see Table 22-8). In developing these thresholds, the agencies

1 considered levels at which project emissions would be cumulatively considerable. The air district
 2 thresholds have been adopted to prevent further deterioration of ambient air quality, which is
 3 influenced by emissions generated by projects within a specific air basin. The project-level
 4 thresholds therefore consider relevant past, present, and reasonably foreseeable future projects
 5 within the Plan area. For example, as noted in the BAAQMD's (2011) CEQA Guidelines,

6 In developing thresholds of significance for air pollutants, BAAQMD considered the emission levels
 7 for which a project's individual emissions would be cumulatively considerable. If a project exceeds
 8 the identified significance thresholds, its emissions would be cumulatively considerable, resulting in
 9 significant adverse air quality impacts to the region's existing air quality conditions. Therefore,
 10 additional analysis to assess cumulative impacts is unnecessary.

11 And in the SMAQMD's (2011) CEQA Guidelines,

12 The District's approach to thresholds of significance is relevant to whether a project's individual
 13 emissions would result in a cumulatively considerable adverse contribution to the SVAB's existing air
 14 quality conditions. If a project's emissions would be less than these levels, the project would not be
 15 expected to result in a cumulatively considerable contribution to the significant cumulative
 16 impact...If construction-generated NO_x emissions cannot be mitigated or offset below 85 lb/day, the
 17 project would substantially contribute to this **significant** air quality impact.

18 And in the SJVAPCD's (2002) CEQA Guidelines,

19 Any proposed project that would individually have a significant air quality impact...would also be
 20 considered to have a significant cumulative air quality impact.

21 And in the YSAQMD's (2007) CEQA Guidelines,

22 Any proposed project that would individually have a significant air quality impact (see above for
 23 project-level Thresholds of Significance) would also be considered to have a significant cumulative
 24 impact.

25 The emissions thresholds presented in Table 22-8 therefore represent the maximum emissions a
 26 project may generate before contributing to a cumulative impact on regional air quality. Therefore,
 27 exceedances of the project-level thresholds, as identified in Section 22.3.3, would be cumulatively
 28 considerable. As discussed in Section 22.3.2.1, the effects analysis for GHG emissions is cumulative
 29 due to the nature of GHGs and global climate change. Please refer to Impacts AQ-21, AQ-22, and AQ-
 30 23 in Section 22.3.3 for an evaluation of cumulative GHG impacts.

31 **Cumulative Effects of the No Action Alternative**

32 The cumulative effect of the No Action Alternative is anticipated to result in short-term emissions
 33 from construction activities and long-term reductions in criteria pollutants and GHG emissions.
 34 Construction of ongoing projects, programs, and plans under the No Action Alternative, when
 35 combined with emissions from ongoing and reasonably foreseeable future projects, would generate
 36 short-term emissions that could cumulatively affect regional and local air quality. Projects
 37 implemented under the No Action Alternative would be required to comply with air district rules
 38 and regulations to reduce construction-related criteria pollutant and GHG emissions. It is
 39 anticipated that similar construction projects in study area, including those listed in Appendix 3D,
 40 *Defining Existing Conditions, the No Action/No Project Alternative, and Cumulative Impact Conditions*
 41 would also be required to implement similar measures to reduce project-level construction-related
 42 emissions. Long-term operation of the No Action Alternative would result in a net decrease in all
 43 criteria air pollutants and GHGs, potentially contributing to a regional air quality benefit. However, a

1 portion of this benefit may be offset by operational emissions generated by future projects
2 implemented in the study area.

3 The Delta and vicinity are within a highly active seismic area, with a generally high potential for
4 major future earthquake events along nearby and/or regional faults, and with the probability for
5 such events increasing over time. Based on the location, extent and non-engineered nature of many
6 existing levee structures in the Delta area, the potential for significant damage to, or failure of, these
7 structures during a major local seismic event is generally moderate to high. (See Appendix 3E,
8 *Potential Seismic and Climate Change Risks to SWP/CVP Water Supplies* for more detailed discussion).
9 To reclaim land or rebuild levees after a catastrophic event due to climate change or a seismic event
10 would introduce considerable heavy equipment and associated vehicles, including dozers,
11 excavators, pumps, water trucks, and haul trucks, which would generate emissions and create
12 adverse air quality effects. While similar risks would occur under implementation of the action
13 alternatives, these risks may be reduced by BDCP-related levee improvements along with those
14 projects identified for the purposes of flood protection in Appendix 3D, *Defining Existing Conditions,*
15 *the No Action/No Project Alternative, and Cumulative Impact Conditions.*

16 **Cumulative Effects of the Action Alternatives**

17 **Impact AQ-28: Cumulative Generation of Regional Criteria Pollutants in Excess of Air District** 18 **Threshold during Construction of the Water Conveyance Facility**

19 **NEPA Effects:** The project-level analysis performed in Section 22.3.3 evaluates significance within
20 each Study area air district. While the thresholds summarized in Table 22-8 can be applied to
21 evaluate cumulative impacts within individual air districts, this impact assessment considers
22 exceedances of one more air district threshold to result in a cumulatively considerable *regional* air
23 quality impact. This approach was chosen out of an abundance of caution to capture regional air
24 quality impacts and account for potential emissions transport between the four air districts.

25 Table 22-153 summarizes the project-level regional effects for construction of the water conveyance
26 facilities associated with Alternatives 1A, 2A, and 6A; 1B, 2B, and 6B; 1C, 2C, and 6C; 3, 4, 7, and 8; 5;
27 and 9 in each Study area air district without mitigation. Adverse effects are highlighted with
28 underline text.

1 **Table 22-153. Project-Level Determinations for Construction of the Water Conveyance Facilities**
 2 **Associated with BDCP (Impacts AQ-1 through AQ-4 and Impact AQ-20)**

Alternative/ Air District	Potential Effects for Impacts AQ-1 through AQ-4 and Impact AQ-20					
	ROG	NO _x	CO	PM10	PM2.5	SO ₂
Alternatives 1A, 2A, and 6A						
SMAQMD	<u>A^a</u>	<u>A</u>	NA	<u>A^a</u>	NA	NA
YSAQMD	<u>A^a</u>	<u>A</u>	NA	<u>A</u>	NA	NA
BAAQMD	<u>A</u>	<u>A</u>	NA	NA	NA	NA
SJVAPCD	<u>A</u>	<u>A</u>	NA	<u>A</u>	NA	NA
Alternatives 1B, 2B, and 6B						
SMAQMD	<u>A^a</u>	<u>A</u>	NA	<u>A^a</u>	NA	NA
YSAQMD	<u>A^a</u>	<u>A</u>	NA	<u>A</u>	NA	NA
BAAQMD	<u>A</u>	<u>A</u>	NA	NA	NA	NA
SJVAPCD	<u>A</u>	<u>A</u>	NA	<u>A</u>	<u>A</u>	NA
Alternatives 1C, 2C, and 6C						
SMAQMD	<u>A^a</u>	<u>A</u>	NA	NA	NA	NA
YSAQMD	<u>A</u>	<u>A</u>	NA	<u>A</u>	NA	NA
BAAQMD	<u>A</u>	<u>A</u>	NA	NA	NA	NA
SJVAPCD	NA	NA	NA	NA	NA	NA
Alternative 3						
SMAQMD	<u>A^a</u>	<u>A</u>	NA	NA	NA	NA
YSAQMD	NA	NA	NA	<u>A</u>	NA	NA
BAAQMD	<u>A</u>	<u>A</u>	NA	NA	NA	NA
SJVAPCD	<u>A</u>	<u>A</u>	NA	<u>A</u>	NA	NA
Alternative 4						
SMAQMD	NA	<u>A</u>	NA	NA	NA	NA
YSAQMD	NA	NA	NA	NA	NA	NA
BAAQMD	<u>A</u>	<u>A</u>	NA	NA	NA	NA
SJVAPCD	<u>A</u>	<u>A</u>	NA	<u>A</u>	NA	NA
Alternatives 5						
SMAQMD	NA	<u>A</u>	NA	NA	NA	NA
YSAQMD	NA	NA	NA	NA	NA	NA
BAAQMD	<u>A</u>	<u>A</u>	NA	NA	NA	NA
SJVAPCD	<u>A</u>	<u>A</u>	NA	<u>A</u>	NA	NA
Alternatives 7 and 8						
SMAQMD	<u>A^a</u>	<u>A</u>	NA	NA	NA	NA
YSAQMD	<u>A^a</u>	<u>A</u>	NA	<u>A</u>	NA	NA
BAAQMD	<u>A</u>	<u>A</u>	NA	NA	NA	NA
SJVAPCD	<u>A</u>	<u>A</u>	NA	<u>A</u>	NA	NA
Alternative 9						
SMAQMD	<u>A^a</u>	<u>A</u>	NA	<u>A^a</u>	NA	NA
YSAQMD	<u>A^a</u>	<u>A^a</u>	NA	<u>A^a</u>	NA	NA
BAAQMD	<u>A</u>	<u>A</u>	NA	NA	NA	NA
SJVAPCD	NA	<u>A</u>	NA	<u>A</u>	NA	NA

^a Effect would occur in the SFNA (combined activities in SMAQMD and YSAQMD).

NA = Not adverse.

A = Adverse.

3

4 Based on the data presented in Table 22-153, all alternatives would exceed one or more air district
 5 threshold and would therefore result in adverse cumulative effects on regional air quality in the
 6 region. Exceedances of air district regional thresholds could lead to exceedances of applicable air

1 quality standards in the Study area and could contribute to or worsen an existing air quality
 2 conditions. Combined effects of project-level ROG and NO_x emissions with other emissions sources
 3 in the air basin could increase photochemical reactions and the formation of tropospheric ozone.
 4 While increases in ozone may contribute to adverse health effects, it is important to note that an
 5 increase in ozone does not guarantee an increase in respiratory ailments since some individuals may
 6 be exposed to certain concentrations of ozone and experience no symptoms. Nevertheless, the effect
 7 of generating emissions in excess of regional air district thresholds would be cumulatively
 8 considerable and adverse.

9 Mitigation Measures AQ-1 through AQ-4 are available to address ROG, NO_x, PM₁₀, and PM_{2.5} effects
 10 for all alternatives except Alternatives 1C, 2C, and 6C. Although Mitigation Measures AQ-3a and AQ-
 11 3b would be available to reduce ROG and NO_x in the BAAQMD, given the magnitude of estimated
 12 emissions, neither measure would reduce emissions below district thresholds.⁶⁴ Accordingly,
 13 construction of Alternatives 1C, 2C, and 6C would result in an adverse and cumulative air quality
 14 effect in the BAAQMD.

15 **CEQA Conclusion:** Emissions generated by Alternatives 1A through 9 would exceed one or more air
 16 district threshold. As discussed above, the air district thresholds represent the maximum emissions
 17 a project may generate before contributing to a cumulative impact on regional air quality.
 18 Consequently, exceedances of the project-level thresholds, as identified in Table 22-153, would
 19 result in a cumulatively considerable regional air quality impact.

20 Exceedances of air district regional thresholds could lead to exceedances of applicable air quality
 21 standards in the Study area and could contribute to or worsen an existing air quality conditions.
 22 Combined effects of project-level ROG and NO_x emissions with other emissions sources in the air
 23 basin could increase photochemical reactions and the formation of tropospheric ozone. While
 24 increases in ozone may contribute to adverse health effects, it is important to note that an increase
 25 in ozone does not guarantee an increase in respiratory ailments since some individuals may be
 26 exposed to certain concentrations of ozone and experience no symptoms. Nevertheless, the impact
 27 of generating emissions in excess of regional air district thresholds would be cumulatively
 28 considerable and significant.

29 Mitigation Measures AQ-1 through AQ-4 are available to reduce ROG, NO_x, PM₁₀, and PM_{2.5} to less
 30 than significant by offsetting emissions below air district CEQA thresholds for all Alternatives except
 31 Alternatives 1C, 2C, and 6C. Although Mitigation Measures AQ-3a and AQ-3b would be available to
 32 reduce ROG and NO_x in the BAAQMD, given the magnitude of estimated emissions, neither measure
 33 would reduce emissions below district thresholds.⁶⁵ Accordingly, construction of Alternatives 1C,

⁶⁴ The amount of moneys required to achieve sufficient contracts to reduce project emissions below air district thresholds would require immediate and substantial outreach, staffing, and other resources. There are also a number of hurdles related to accelerating equipment turnover and identifying available projects. While the mitigation measure will reduce project emissions, it is unlikely sufficient resources can be identified to reduce emissions by the amount required to achieve a less-than-significant finding.

⁶⁵ The amount of moneys required to achieve sufficient contracts to reduce project emissions below air district thresholds would require immediate and substantial outreach, staffing, and other resources. There are also a number of hurdles related to accelerating equipment turnover and identifying available projects. While the mitigation measure will reduce project emissions, it is unlikely sufficient resources can be identified to reduce emissions by the amount required to achieve a less-than-significant finding.

1 2C, and 6C in the BAAQMD would result in a cumulative air quality effect (i.e., significant and
2 unavoidable).

3 **Mitigation Measure AQ-1a: Mitigate and Offset Construction-Generated Criteria Pollutant**
4 **Emissions within the SFNA to Net Zero (0) for Emissions in Excess of General Conformity**
5 ***De Minimis* Thresholds (Where Applicable) and to Quantities below Applicable CEQA**
6 **Thresholds for Other Pollutants**

7 Please see Mitigation Measure AQ-1a under Impact AQ-1 in the discussion of Alternative 1A.

8 **Mitigation Measure AQ-1b: Develop an Alternative or Complementary Offsite Mitigation**
9 **Program to Mitigate and Offset Construction-Generated Criteria Pollutant Emissions**
10 **within the SFNA to Net Zero (0) for Emissions in Excess of General Conformity *De Minimis***
11 **Thresholds (Where Applicable) and to Quantities below Applicable CEQA Thresholds for**
12 **Other Pollutants**

13 Please see Mitigation Measure AQ-1b under Impact AQ-1 in the discussion of Alternative 1A.

14 **Mitigation Measure AQ-3a: Mitigate and Offset Construction-Generated Criteria Pollutant**
15 **Emissions within BAAQMD/SFBAAB to Net Zero (0) for Emissions in Excess of General**
16 **Conformity *De Minimis* Thresholds (Where Applicable) and to Quantities below**
17 **Applicable BAAQMD CEQA Thresholds for Other Pollutants**

18 Please see Mitigation Measure AQ-3a under Impact AQ-3 in the discussion of Alternative 1A.

19 **Mitigation Measure AQ-3b: Develop an Alternative or Complementary Offsite Mitigation**
20 **Program to Mitigate and Offset Construction-Generated Criteria Pollutant Emissions**
21 **within the BAAQMD/SFBAAB to Net Zero (0) for Emissions in Excess of General**
22 **Conformity *De Minimis* Thresholds (Where Applicable) and to Quantities below**
23 **Applicable BAAQMD CEQA Thresholds for Other Pollutants**

24 Please see Mitigation Measure AQ-3b under Impact AQ-3 in the discussion of Alternative 1A.

25 **Mitigation Measure AQ-4a: Mitigate and Offset Construction-Generated Criteria Pollutant**
26 **Emissions within SJVAPCD/SJVAB to Net Zero (0) for Emissions in Excess of General**
27 **Conformity *De Minimis* Thresholds (Where Applicable) and to Quantities below**
28 **Applicable SJVAPCD CEQA Thresholds for Other Pollutants**

29 Please see Mitigation Measure AQ-4a under Impact AQ-4 in the discussion of Alternative 1A.

30 **Mitigation Measure AQ-4b: Develop an Alternative or Complementary Offsite Mitigation**
31 **Program to Mitigate and Offset Construction-Generated Criteria Pollutant Emissions**
32 **within the SJVAPCD/SJVAB to Net Zero (0) for Emissions in Excess of General Conformity**
33 ***De Minimis* Thresholds (Where Applicable) and to Quantities below Applicable SJVAPCD**
34 **CEQA Thresholds for Other Pollutants**

35 Please see Mitigation Measure AQ-4b under Impact AQ-4 in the discussion of Alternative 1A.

1 **Impact AQ-29: Cumulative Generation of Criteria Pollutants in Excess of Air District Regional**
 2 **Threshold during Operation of the Water Conveyance Facility**

3 **NEPA Effects:** As shown in Impacts AQ-5 through AQ-8, operation and maintenance activities under
 4 all alternatives would not exceed the regional air district thresholds of significance. Consequently,
 5 there would be no cumulative adverse effect to regional air quality.

6 **CEQA Conclusion:** Emissions generated during operation and maintenance activities would not
 7 exceed the air district regional thresholds for criteria pollutants. The emissions thresholds (Table
 8 22-8) have been adopted to ensure projects do not contribute to cumulative, regional air quality
 9 impacts. Projects that do not violate the thresholds are not cumulatively considerable. The impact
 10 would be less than cumulatively considerable (i.e., less than significant). No mitigation is required.

11 **Impact AQ-30: Expose Sensitive Receptors to Cumulative Localized Pollutant Concentrations**
 12 **(PM, CO, and DPM) from Construction of CM1**

13 **NEPA Effects:** The BDCP HRA analyzing construction activities found that of the 15 alternatives
 14 considered, all the alternatives would expose sensitive receptors to significant increases in DPM
 15 with the exception of Alternative 4. Localized PM10 concentrations for all alternatives were found to
 16 exceed significance thresholds at one or more air districts. Localized PM2.5 concentrations under
 17 Alternatives 1B, 2B, and 6B would exceed SJVAPCD's 24-hour and annual concentration thresholds.
 18 No exceedances of the CAAQS for CO are expected under any of the alternatives.

19 Mitigation Measure AQ-9 outlines a tiered strategy to reduce PM10 concentrations and public
 20 exposure to significant health hazards. Similarly, Mitigation Measure AQ-16 would be available to
 21 reduce exposure to substantial cancer risk by relocating affected receptors.

22 Despite the availability of mitigation, there are several reasons why project-specific DPM, PM10, and
 23 PM2.5 emissions associated with all alternatives in the affected air districts may contribute to
 24 significant cumulative health hazards. First, there are several other proposed projects (listed in
 25 Appendix 3D, *Defining Existing Conditions, No Action Alternative, No Project Alternative, and*
 26 *Cumulative Impact Conditions*) that could contribute construction-related DPM, PM10, and PM2.5
 27 emissions in these air districts. In addition, existing operational emissions in these areas from on-
 28 road vehicles, boats, area sources, and stationary sources may contribute to cumulative DPM, PM10,
 29 and PM2.5 concentrations. As a result, construction of any of the alternatives would result in an
 30 adverse cumulative contribution to pollutant concentrations at sensitive receptors within these air
 31 basins. This effect would be cumulatively considerable.

32 **CEQA Conclusion:** Construction of the BDCP water conveyance features would contribute to
 33 significant cumulative health risks at sensitive receptors. While Mitigation Measures AQ-9 and AQ-
 34 14 would reduce project specific health risks, emissions generated from the development of each
 35 alternative would still be cumulatively significant based on the contribution from other existing
 36 operational emission sources. This impact would be significant and unavoidable.

37 **Mitigation Measure AQ-9: Implement Measures to Reduce Re-Entrained Road Dust and**
 38 **Receptor Exposure to PM2.5 and PM10**

39 Please see Mitigation Measure AQ-9 under Impact AQ-9 in the discussion of Alternative 1A.

1 **Mitigation Measure AQ-16: Relocate Sensitive Receptors to Avoid Excess Cancer Risk**

2 Please see Mitigation Measure AQ-16 under Impact AQ-16 in the discussion of Alternative 1A.

3 **Impact AQ-31: Generation of Cumulative Regional Criteria Pollutants from Implementation of**
4 **CM2–CM11**

5 **NEPA Effects:** Implementation of the CM2–CM11 could generate additional traffic on roads and
6 highways in and around Suisun Marsh and the Yolo Bypass related to restoration or monitoring
7 activities. Habitat restoration and enhancement activities that require physical changes or heavy-
8 duty equipment would generate construction emissions through earthmoving activities and heavy-
9 duty diesel-powered equipment. The intensity and frequency of vehicle trips and construction
10 activities associated with the CM2–CM11 are assumed to be relatively minor, but could exceed local
11 air district thresholds in the Study area. The effect would vary according to the equipment used in
12 construction of a specific conservation measure, the timing of the actions called for in the
13 conservation measure, and the air quality conditions at the time of implementation.

14 Exceedances of air district regional thresholds could lead to exceedances of applicable air quality
15 standards in the Study area and could contribute to or worsen an existing air quality conditions.
16 Combined effects of project-level ROG and NO_x emissions with other emissions sources in the air
17 basin could increase photochemical reactions and the formation of tropospheric ozone. While
18 increases in ozone may contribute to adverse health effects, it is important to note that an increase
19 in ozone does not guarantee an increase in respiratory ailments since some individuals may be
20 exposed to certain concentrations of ozone and experience no symptoms. Nevertheless, the impact
21 of generating emissions in excess of regional air district thresholds would be cumulatively
22 considerable. Mitigation Measure AQ-24 would be available to reduce this effect, but emissions
23 would still be adverse.

24 **CEQA Conclusion:** Cumulative construction and operational emissions associated with the
25 restoration and enhancement actions could exceed applicable air district thresholds. Exceedances of
26 air district regional thresholds could lead to exceedances of applicable air quality standards in the
27 Study area and could contribute to or worsen an existing air quality conditions. Combined effects of
28 project-level ROG and NO_x emissions with other emissions sources in the air basin could increase
29 photochemical reactions and the formation of tropospheric ozone. While increases in ozone may
30 contribute to adverse health effects, it is important to note that an increase in ozone does not
31 guarantee an increase in respiratory ailments since some individuals may be exposed to certain
32 concentrations of ozone and experience no symptoms. Nevertheless, the impact of generating
33 emissions in excess of regional air district thresholds would be cumulatively considerable.
34 Mitigation Measure AQ-18 would be available to reduce this effect, but may not be sufficient to
35 reduce emissions below applicable air quality management district thresholds (see Table 22-8).
36 Consequently, this impact would be cumulatively considerable and significant and unavoidable.

37 **Mitigation Measure AQ-24: Develop an Air Quality Mitigation Plan (AQMP) to Ensure Air**
38 **District Regulations and Recommended Mitigation are Incorporated into Future**
39 **Conservation Measures and Associated Project Activities**

40 Please see Mitigation Measure AQ-24 under Impact AQ-24 in the discussion of Alternative 1A.

1 **Impact AQ-32: Expose Sensitive Receptors to Cumulative Localized Pollutant Concentrations**
 2 **(PM, CO, and DPM) from Implementation of CM2 through CM11**

3 **NEPA Effects:** Additional traffic and heavy-duty equipment required to implement CM2-CM11
 4 would generate emissions that could expose nearby receptors to local concentrations of PM, CO, and
 5 DPM. Proposed projects (listed in Appendix 3D) adjacent to restoration sites could increase
 6 pollutant concentrations at exposed receptors. Effects would vary according to the equipment used,
 7 locations of emissions sources and receptors, and underlying meteorology. Increases in PM, CO, or
 8 DPM (cancer and non-cancer-risk) at receptors sites could result in adverse health impacts.
 9 Mitigation Measure AQ-25 is available to address the effect and requires preparation of a site-
 10 specific HRA for all restoration sites adjacent to sensitive receptors. The HRA would not only
 11 consider project-level emissions, but also cumulative contributions from other reasonably
 12 foreseeable projects, as required by local air district CEQA guidelines.

13 **CEQA Conclusion:** Additional traffic and heavy-duty equipment required to implement CM2-CM11
 14 would generate emissions that could expose nearby receptors to local concentrations of PM, CO, and
 15 DPM. Proposed projects (listed in Appendix 3D) adjacent to restoration sites could increase
 16 pollutant concentrations at exposed receptors. Increases in PM, CO, or DPM (cancer and non-cancer-
 17 risk) at receptors sites could result in adverse health impacts. Mitigation Measure AQ-25 requires
 18 preparation of a site-specific HRA for all restoration sites adjacent to sensitive receptors. The HRA
 19 would not only consider project-level emissions, but also cumulative contributions from other
 20 reasonably foreseeable projects, as required by local air district CEQA guidelines. Consequently, this
 21 impact would be less than significant with mitigation.

22 **Mitigation Measure AQ-25: Prepare a Project-Level Health Risk Assessment to Reduce**
 23 **Potential Health Risks from Exposure to Localized DPM and PM Concentrations**

24 Please see Mitigation Measure AQ-25 under Impact AQ-25 in the discussion of Alternative 1A.

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6 **22.4.2 Personal Communications**

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21 regarding construction health risk assessment procedures for diesel exhaust from construction
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24 Reduction Agreement to mitigate CEQA impacts to less than significant.

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