CHAPTER 15
AIR QUALITY

This chapter describes existing air quality conditions, identifies current state and federal regulations, including the attainment classifications for various types of air pollutants, and evaluates the potential air quality effects that could occur as a result of implementing the Proposed Project/Action or an alternative. The potential impacts on air quality that could occur as a result of the Proposed Yuba Accord or an alternative would result from a change in the amount of pumping. Within the Yuba Region, groundwater pumping would increase over current levels for the Proposed Project/Action and alternatives. Depending on the type of energy used to power the increased pumping, there could be impacts to air quality. For example, if diesel engines are used to power the pumps, the emissions of certain pollutants could increase in the Yuba Region. Conversely, the increase in surface water deliveries available to agricultural users in the Export Service Area may reduce groundwater pumping in areas south of the Delta. This reduction in groundwater pumping in the Export Service Area may reduce emissions of pollutants.

15.1 ENVIRONMENTAL SETTING/AFFECTED ENVIRONMENT

The air quality of a particular area is influenced by several factors, including the amounts of pollutants released, the nature of the sources, and the ability of the atmosphere to transport and disperse the pollutants. The main determinants of transport and dispersion are wind, atmospheric stability or turbulence, topography, and the existence of inversion layers.

Air quality in California is regulated by the EPA and the California Air Resources Board (CARB). Regulation occurs at regional levels in designated Air Basins, and at local levels by Air Pollution Control Districts (APCD) or Air Quality Management Districts (AQMD). These districts are responsible for attaining both state and federal air quality targets. For some pollutants, separate targets have been established for different periods of the year. Most targets have been set to protect public health, although some standards have been based on other values, such as protection of crops, protection of materials, or avoidance of nuisance conditions. Various types of air pollutants are measured, including: (1) ozone; (2) carbon monoxide; (3) nitrogen dioxide; and (4) particulate matter that measures 10 microns or less (PM_{10}).

Of the 15 designated air basins (CARB) in California, the northern and southern portions of the Central Valley, where activities associated with the Proposed Yuba Accord would occur, are contained within in the Sacramento Valley Air Basin (SVAB) and the San Joaquin Valley Air Basin (SJVAB), respectively. Air quality in general, and specifically in these two basins, is affected by more than emissions. Meteorology and terrain also can influence air quality. Meteorology can cause year-to-year changes in air quality in which the benefits of emission reductions can be masked. California's terrain also plays a role in the formation of ozone. The Central Valley is characterized by a broad floor with the Cascade Mountain Range in the north, the Sierra Nevada Range in the east, and the Coast Range in the west. These mountains act as air current barriers, preventing dissipation of air pollutants outside of the valley.

Because the Proposed Project/Action and alternatives could potentially affect the SVAB and the SJVAB, the discussion below characterizes existing air quality conditions in the regional area considered to be part of either basin. Due to the nature of air quality issues, the discussion also centers on the regulatory language describing regional air quality pollutants of primary

concern. For more information about the regulatory definitions associated with specific pollutants, see Section 15.1.5).

15.1.1 YUBA REGION

For purposes of this air quality evaluation, the Yuba Region is defined as Yuba County. Yuba County is contained within the Feather River AQMD and, together with 10 other counties, encompasses part of the larger regional SVAB.

Because Yuba County consistently exhibits low annual average oxides of nitrogen (NO_x) and PM_{10} emissions, relative to the other counties in the SVAB, it is generally considered to have relatively good air quality. There are currently no high-emitting facilities located within Yuba County. In addition, Yuba County air quality is designated as attainment (or unclassified) for all federal standards. State standards for pollutants are more stringent than federal standards. As a result of these more stringent state standards, Yuba County air quality is designated as moderate non-attainment for ozone (1 hour) and non-attainment for PM_{10}. For a complete description of regulatory designations see Section 15.1.5.

Pumping of groundwater for agricultural purposes has been conducted within Yuba County for many years. Pumping of groundwater to free up supplies of surface water for transfer (in-lieu groundwater substitution transfers) has occurred since 1991. Groundwater pumping volumes and impacts on the aquifer are described in Chapter 6. Over the past decade, efforts to better understand, monitor and control the use of groundwater in Yuba County have been underway, including efforts to monitor and improve potential air quality impacts associated with groundwater pumping.

15.1.1.1 GROUNDWATER PUMPING, AIR QUALITY MONITORING AND IMPROVEMENT PROGRAM

A number of transfers of surface water and groundwater have been consummated from Yuba County sources (see Table 5-5). For the past few years, the largest purchaser of water from Yuba County has been the EWA, and the second largest has been DWR. The proposed agreements that would constitute the Yuba Accord are structured to provide the first component of water in every year to EWA or its successor program.

The Final EIS/EIR for the existing EWA program (Reclamation *et al.* 2004) includes specific mitigation measures to avoid impacts to air quality by requiring willing sellers to utilize electric pumps, or to require sellers to obtain offsets for air quality impacts, as a condition for purchases of groundwater by EWA. YCWA has been working with DWR and local Member Units to develop a groundwater pumping, air quality monitoring and improvement program that would both meet the requirements of groundwater transfers to EWA and DWR, and improve the overall air quality of Yuba County.

Additionally, for the Proposed Yuba Accord, various commitments to continuing the reduction of potential air quality impacts associated with groundwater pumping are embodied in the agreements that constitute the Yuba Accord Alternative. Section 12.A of the Water Purchase Agreement includes the following provision:

> *In furtherance of the mitigation of potential impacts to air quality from implementation of the Accord, Yuba has implemented as part of the Conjunctive Use Agreements a program to convert certain pumps used to pump groundwater from diesel to electric, or to other forms of energy that reduce air quality impacts. Conversion of pumps to*

electricity or other forms of energy that reduce air quality impacts has been and will be performed by Yuba for purposes of this Agreement. Prior to submitting invoices to the Buyers under Section 10 ("Invoicing") of this Agreement, Yuba will: (1) submit to the Technical Committee for review documentation of the diesel conversion work performed and costs incurred from and after September 1, 2004 for purposes of this Agreement and the Accord; and (2) confirm to the Policy Committee that the work performed and costs incurred were in furtherance of mitigation of potential impacts on air quality from implementation of the Accord.

Additionally, Paragraph 15 of the Conjunctive Use Agreements commit to the following:

To avoid air quality impacts from the implementation of the settlement (including the groundwater substitution water transfer program), the Agency would coordinate with the Member Units in the development and implementation of a program to convert certain diesel pumps to electrical pumps. The Agency would reimburse the Member Units for electricity standby charges incurred to implement the conjunctive use program if the wells were not used to provide water for a groundwater substitution water transfer during the period of years that the standby charge is incurred.

The groundwater pumping air quality monitoring and improvement program that is underway in Yuba County is designed to achieve no net impact to air quality as a result of groundwater pumping in support of groundwater substitution transfers. A schematic of the program is shown in **Figure 15-1**.

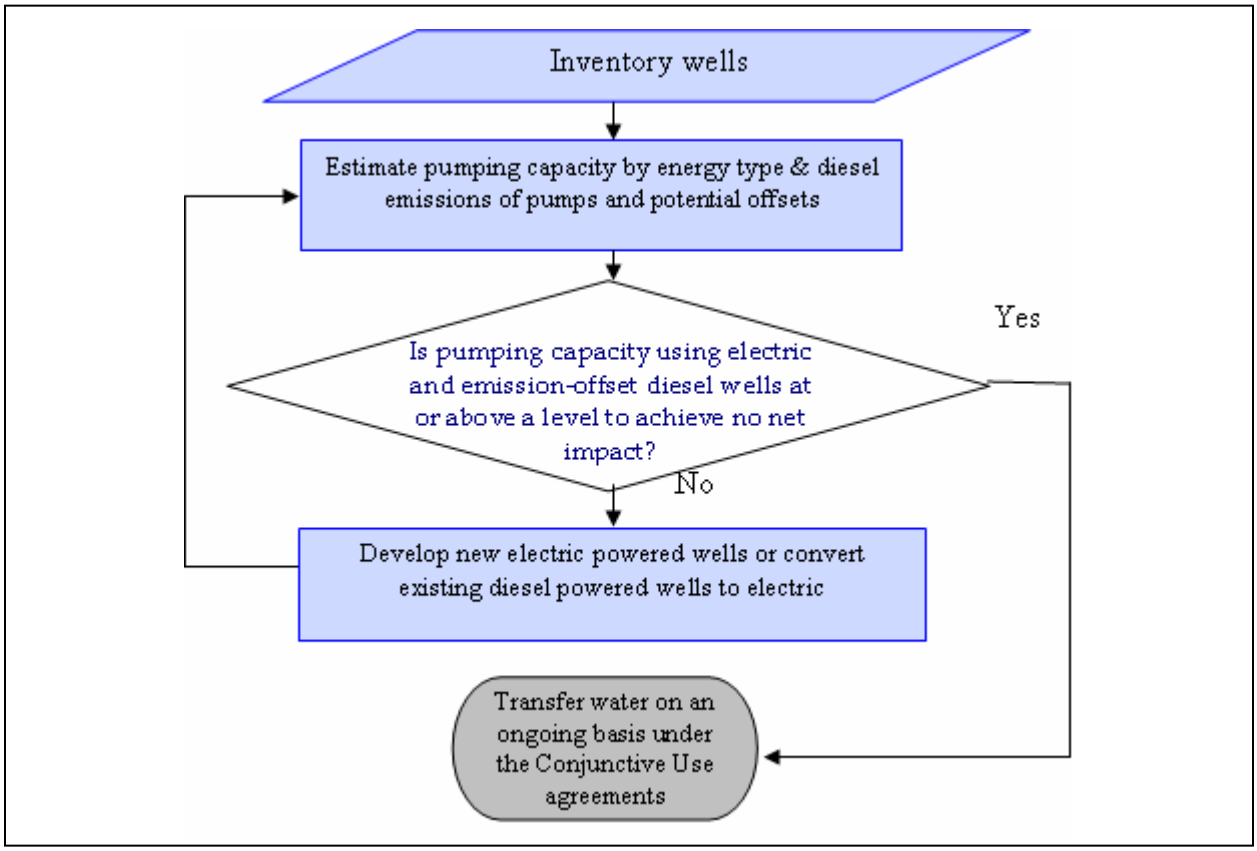

Figure 15-1. Flow Chart of Groundwater Pumping, Air Quality Monitoring and Improvement Program

YCWA has begun to implement the mitigation plan described above. YCWA, with funding from DWR, has nearly completed an inventory of grower-owned wells that could be used for pumping under the Conjunctive Use Agreements. The inventory includes an assessment of the pumping capacity of each well, the existing power source (electric or diesel) and information about the diesel engines used on wells (make, model, manufacturer and manufacture date) in order to estimate emissions.[1]

Currently, the well inventories of six out of the seven participating Member Units are complete. The most recent Yuba County well inventory, conducted in 2005 and 2006 by DWR, indicates that there are 235 groundwater wells distributed throughout the participating Member Units in both the North and South Yuba subbasins (Figure 6-2 and Figure 6-3). Approximately 90 percent, or 210, of the wells are currently powered by electricity. YCWA is in the process of working with the participating Member Units to convert some of the existing diesel-powered engines to electricity. In 2004, YCWA worked closely with two of the participating Member Units and the Feather River AQMD to submit applications for Carl Moyer grant funds[2] to convert four of the existing diesel engines to electricity. YCWA would continue to work closely with the Feather River AQMD and the participating Member Units to submit additional applications for Carl Moyer grant funds, as needed and desired. Additionally, the Proposed Project/Action provides funds to convert diesel wells to electricity as needed.

The second step in the program is to assess whether the necessary level of groundwater pumping is attainable with the pumping capacity of existing electric wells. With 90 percent of wells powered by electricity, and more conversions underway, electric pumping capacity for groundwater substitution transfers is generally sufficient (see Chapter 6 for a detailed analysis of likely pumping locations).

Verifying that the wells being pumped are electric is conducted as part of a groundwater substitution transfer. Field visits to the wells participating in groundwater substitution transfers occur every month during the transfer period. Currently, sites are visited to take readings from the flow meters attached to the groundwater pumps, as well as to verify the type of power used for the pumps.

Groundwater pumping to mitigate for surface water deficiencies would not be subject to controls or limitations on the use of non-electric motors for pumping.

15.1.2 CVP/SWP UPSTREAM OF THE DELTA REGION

For the purposes of this air quality evaluation, the CVP/SWP Upstream of the Delta Region is comprised of the SVAB. As described previously, the SVAB is surrounded by mountains, with the Coast Range to the west, the Cascade Range to the north, and the Sierra Nevada Range to the east. In addition to Yuba County, the SVAB is comprised of all or parts of ten other

[1] Pumping capacity is the lesser of the physical capacity of the well-to-pump water and the crop water demand for the field that the well is irrigating. Information about make, model, manufacturer and manufactured year is not always available. Where this information is not available, worst-case assumptions are made when estimating emissions volumes.

[2] The objective of the Carl Moyer grant program is to reduce air pollution emissions by providing grants for the incremental cost of cleaner vehicles and equipment. The program focuses on the replacement of older heavy-duty diesel engines with electric, alternative fuel, or cleaner diesel technology.

counties: Shasta, Tehama, Butte, Glenn, Sutter, Colusa, Yolo, Placer, Solano, and Sacramento counties.

During summer in the SVAB, the Pacific high pressure system can create low-elevation inversion layers where air descending from high pressure overlies shallow, cooler layers of air. This prevents normal mixing of the atmosphere and prevents the vertical dispersion of air above the boundary layer. As a result, air pollutants can become concentrated during summer, decreasing air quality until daytime heating of solid surfaces raises the inversion to the point where it breaks and allows full mixing. During winter, when the Pacific high-pressure system moves south, stormy, rainy weather visits the region intermittently and persistent inversions are less common. Prevailing winter winds from the southwest disperse pollutants, often resulting in clear, sunny weather and good air quality over most of this portion of the region. High particulate levels can, however, occur in winter when stable weather occurs and tule fog develops under cold air inversions. In the SVAB, ozone and PM_{10} are pollutants of concern because concentrations of these pollutants have been found to exceed standards (see Section 15.1.4). Ozone is a seasonal problem derived from photochemical reactions of hydrocarbons and oxides of nitrogen in the presence of sunlight, occurring predominantly from approximately May through October.

15.1.3 DELTA REGION

As stated above, the air quality analysis focuses on the SVAB and the SJVAB, which do not extend to the Delta Region. Because there are no actions associated with the Proposed Yuba Accord that could affect air quality in the Delta, a discussion of this region is not included in this chapter.

15.1.4 EXPORT SERVICE AREA

For the purposes of this air quality evaluation, the Export service area is defined as the San Joaquin Valley Air Basin. The area within the San Joaquin Valley Air Basin is managed by the San Joaquin Valley APCD. Air quality within the SJVAB has been noted in two different designations to be some of the worst in the Country. The San Joaquin Valley ranked third worst in the country of 1-hour ozone design values using 2000 through 2002 data (the 1-hour ozone design value is described in section 15.1.5) (California Air Resources Board 2005). The SJVAB ranks in the top eight western areas for non-attainment in PM_{10} (California Air Resources Board 2005). All of the counties within the San Joaquin Valley APCD are designated as non-attainment for all federal and state standards. For a complete description of regulatory designations see Section 15.1.5, Regulatory Setting, below.

15.1.5 REGULATORY SETTING

Air quality management responsibilities exist at local, state, and federal levels of government. Air quality management planning programs were developed during the past decade, generally in response to requirements established by the federal CAA. In most cases, state air quality standards are more stringent than the federal EPA standards. Pollutants for which federal and state standards have been established are termed "criteria" pollutants, because the standards are based on studies of health effects criteria that show a relationship between the pollutant concentration and its effect. From this relationship, the EPA and the state (i.e., CARB) also establish acceptable pollutant concentration levels and ambient air quality standards. Air quality criteria pollutants of primary concern are identified in California and federal ambient air quality standards for these criteria pollutants are presented in **Table 15-2.**

Table 15-1. Air Quality Criteria Pollutants of Primary Concern

Pollutant	Major Sources
Ozone	Combustion sources, such as factories and automobiles, evaporation of solvents and fuels.
Carbon Monoxide	Automobile exhaust, combustion of fuels, and combustion of wood in woodstoves and fireplaces.
Nitrogen Oxides	Automobile and diesel truck exhaust, industrial processes, fossil-fueled power plants.
Sulfur Dioxide	Diesel vehicle exhaust, oil-powered power plants, industrial processes.
PM_{10}	Dust, erosion, incinerators, automobile and aircraft exhaust, and open fires.

Table 15-2. State and Federal Short-term Air Quality Standards

Pollutant	Averaging Time	California Standards [a]	Federal Standards [b]	
		Concentration[c]	Primary [a, d]	Secondary[a, e]
Ozone (O_3)	1 Hour 8 Hours*	0.09 ppm (180 µg/m^3) 0.070 ppm (137 µg/m^3) [f]	-- 0.08 ppm (157 µg/m^3)	Same as Primary Standard
Respirable Particulate Matter (PM_{10})	24 Hours Annual arithmetic mean	50 µg/m^3 20 µg/m^3	150 µg/m^3 50 µg/m^3	Same as Primary Standard
Fine Particulate Matter (PM) [c]	24 Hours Annual arithmetic mean	No Separate State Std. 12 µg/m^3	65 µg/m^3 15 µg/m^3	Same as Primary Standard
Carbon Monoxide (CO)	8 Hours 1 Hour 8 Hours (Lake Tahoe)	9.0 ppm (10 mg/m^3) 20 ppm (23 mg/m^3) 6 ppm (7 mg/m^3)	9.0 ppm (10 mg/m^3) 35 ppm (40 mg/m^3) --	None -- --
Nitrogen Oxides (NO_x)	Annual arithmetic mean 1 Hour	-- 0.25 ppm (470 µg/m^3)	0.053 ppm (100 µg/m^3) --	Same as Primary Standard
Sulfur Dioxide (SO_2)	Annual arithmetic men 24 Hours 3 Hours 1 Hour	-- 0.04 ppm (105 µg/m^3) -- 0.25 ppm (655 µg/m^3)	0.030 ppm (80 µg/m^3) 0.14 ppm (365 µg/m^3) -- --	-- -- 0.5 ppm (1300 µg/m^3) --
Lead [g]	30 Day Average Calendar Quarter	1.5 µg/m^3 --	-- 1.5 µg/m^3	-- Same as Primary Standard
Visibility Reducing Particles [h]	8 Hours		N/A	
Sulfates	24 Hours	25 µg/m^3		
Hydrogen Sulfide	1 Hour Calendar Quarter	0.03 ppm (42 µg/m^3) --		
Vinyl Chloride [e]	24 Hours	0.01 ppm (26 µg/m^3)		

[a] California standards for ozone, carbon monoxide (except Lake Tahoe), sulfur dioxide (1 and 24 hour), nitrogen dioxide, suspended particulate manner – PM_{10}, $PM_{2.5}$, and visibility reducing particulates , are quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the CCR.

[b] National standards (other than ozone, particulate matter, and those based on annual averages or annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest eight-hour concentration in a year, averaged over three years, is equal to or less than the standard. For PM^{10}, the 24-hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration is above 365 µg/m^3 is equal to or less than one. For $PM_{2.5}$, the 24-hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard.

[c] Concentrations are expressed first in units in which they were promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25°C and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas

[d] National Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health.

[e] National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

[f] New federal 8-hour ozone and fine particulate matter standards were promulgated by EPA on July 18, 1997.

[g] The CARB has identified lead and vinyl chloride as "toxic air contaminants" with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.

[h] Extinction coefficient of 0.23 per kilometer – visibility of ten miles or more (0.07 – 30 miles or more for Lake Tahoe) due to particles when relative humidity is less than 70 percent.

* This concentration was approved by CARB on April 28, 2005 and became effective in May 2007.

ppm - parts per million (by volume)

µg/m^3 - microgram per cubic meter

Source: (California Air Resources Board Website 2005)

15.1.5.1 FEDERAL

The federal CAA requires the EPA to establish and maintain standards for common air pollutants. These standards are used to manage air quality across the country, and regions are evaluated for compliance with the standards. Federal designations for criteria pollutants are defined as follows (see Section 107 (d)(1) of the CAA):

- **Non-attainment –** Any area that does not meet (or that contributes to ambient air quality in a nearby area that does not meet) the national primary or secondary ambient air quality standard for the pollutant;
- **Attainment –** Any area (other than an area identified as non-attainment above) that meets the national primary or secondary ambient air quality standard for the pollutant; and
- **Unclassifiable –** Any area that cannot be classified on the basis of available information as meeting or not meeting the national primary or secondary ambient air quality standard for the pollutant.

An area can be designated as a moderate, severe, serious, or extreme non-attainment area depending upon the level of pollutant concentrations.

Under the conformity provisions of the federal CAA, no federal agency may approve a project unless the project has been demonstrated to conform to federal Ambient Air Quality Standards. These conformity provisions were put in place to ensure that federal agencies would contribute to the efforts of attaining the National Ambient Air Quality Standards. The EPA has issued two sets of conformity guidelines: transportation conformity rules that apply to transportation plans and projects, and general conformity rules that apply to all other federal actions. A conformity determination[3] is only required for the alternative that is ultimately approved and selected.

15.1.5.2 STATE

The State of California has also adopted standards for criteria pollutants. State designations for criteria pollutants are defined as follows (CCR Title, 17 §§ 70303, 70304):

- **Attainment –** (1) Data for record show that no state standard for that pollutant was violated at any site in the area; and (2) data for record meet representativeness and completeness criteria for a location at which the pollutant concentrations are expected to be high based on the spatial distribution of emission sources in the area and the relationship of emissions to air quality. Data representativeness criteria are set forth in "Criteria for Determining Data Representativeness" contained in Appendix 1 to the CCR, Title 17, Division 3, Chapter 1, Subchapter 1.5, Article 3. Data completeness criteria are set forth in "Criteria for Determining Data Completeness" contained in Appendix 3 to this article, (see CCR Title 17, §70304).
- **Non-attainment –** (1) Data for record show at least one violation of a state standard for that pollutant in the area, and the measurement of the violation meets the representativeness criteria set forth in "Criteria for Determining Data Representativeness" contained in Appendix 1 to the CCR, Title 17; or (2) limited or no

[3] A conformity determination is a process that demonstrates how an action would conform to the applicable implementation plan. If the emissions cannot be reduced sufficiently, and if air dispersion modeling cannot demonstrate conformity, then either a plan for mitigating or a plan for offsetting the emissions must be pursued.

air quality data were collected in the area, but the state board finds, based on meteorology, topography, and air quality data for an adjacent non-attainment area, that there has been at least one violation of a state standard for that pollutant in the area being designated. An area will not be designated as non-attainment if the only recorded exceedance(s) of that state standard were based solely on data for record determined to be affected by a highly irregular or infrequent event. Data affected by a highly irregular or infrequent event will be identified as such by the executive officer in accordance with the "*Air Resources Board Procedure for Reviewing Air Quality Data Possibly Affected by a Highly Irregular or Infrequent Event*," set forth in Appendix 2 to Title 17, Division 3, Chapter1, Subchapter 1.5, Article 3 (CCR Title, 17 §§ 70303).

- **Unclassified** - A pollutant is designated unclassified if the data are incomplete and do not support a designation of attainment or non-attainment.

CALIFORNIA AIR RESOURCES BOARD

The CARB is responsible for ensuring implementation of the California Clean Air Act (CCAA), and establishing state and federal ambient air quality standards. The federal CAA requires states with non-attainment areas to develop plans, known as State Implementation Plans (SIPs), describing the measures the state will take to achieve attainment with national ambient air quality standards.

To better manage air pollution, California is divided into 15 air basins. Local air districts and other agencies prepare SIP elements for the areas under their regulatory jurisdictions, and submit these elements to CARB for review and approval. CARB incorporates the individual air district plans into a statewide SIP and the plan is then submitted to EPA for approval and publication in the Federal Register.

In 2003, CARB developed a statewide inventory for diesel-fueled agricultural irrigation pumps. As part of the update process CARB contacted seventeen air districts with significant irrigated agricultural acreage to obtain their best estimates of the number of pumps and emissions from stationary mobile diesel-fueled agricultural irrigation pumps. Air districts estimated that owners of fewer than 100 agricultural irrigation pumps were not contacted as part of the update and therefore are not reflected in the statewide inventory. The inventory did not include Yuba County. While the inventory may be modified before adoption of the next SIP, this inventory represents the best available data on agricultural irrigation pump emissions in California.

SACRAMENTO VALLEY AIR BASIN

The SVAB contains parts of eleven counties, stretching 150 miles from Shasta County in the north to Sacramento County in the south. The basin is ringed by the Coast Mountains to the west, the Cascade Range mountains to the north and the Sierra Nevada Range mountains to the east. Within the SVAB there are nine APCDs or AQMDs. Generally, each county has its own APCD or AQMD, with Yuba and Sutter counties combined to form the Feather River AQMD, and Yolo and Solano counties combined to form the Yolo-Solano AQMD.

On-road motor vehicles are the largest source of smog forming air pollution emissions in the SVAB. Seven percent of Californians live in the SVAB, generating 8 percent of all the vehicle miles driven in the state. Emissions of reactive organic gases (ROG), NO_x and carbon monoxide (CO) are all trending downward over the years because of cleaner cars, but emissions of PM_{10} have been increasing at the same time from area-wide sources, primarily fugitive dust from

paved and unpaved roads and increased vehicle travel (California Air Resources Board Website 2006c).

In the SVAB, ozone and PM_{10} are pollutants of concern because concentrations of these pollutants have been found to exceed standards. Ozone is a seasonal pollutant derived from photochemical reactions of hydrocarbons and NO_x in the presence of sunlight, occurring predominantly from approximately May through October.

The estimated average annual emissions of several pollutants in the SVAB, the SVAB emissions as a percent of statewide totals and statewide totals for 2005 are presented in **Table 15-3**. These data were obtained from the air basin data directory on the CARB website. In addition, the federal and state attainment status for each county within the SVAB are presented in **Table 15-4.**

Table 15-3. Sacramento Valley Air Basin – 2005 Estimated Annual Average Emissions

	CO	NO_X	SO_X	PM	PM_{10}	$PM_{2.5}$
Sacramento Valley Air Basin (tons per day)	1,181.7	249.0	6.4	404.41	226.0	86.3
SVAB as a percent of statewide total	8.6%	7.7%	2.1%	10.4%	10.2%	10.0%
Statewide Total (tons per day)	**13,765.6**	**3,219.4**	**301.9**	**3,882.7**	**2,212.0**	**863.9**
Source: (California Air Resources Board Website 2006a)						

SACRAMENTO BASINWIDE AIR POLLUTION CONTROL COUNCIL

The Sacramento Valley Basinwide Air Pollution Control Council (BCC) is authorized pursuant to California Health and Safety Code (HSC) Section 40900, and consists of an elected official designated by the air pollution control district governing board of each district within the SVAB. There are nine council members currently sitting on the BCC.

The purpose of the BCC is to carry out the following activities pursuant to state law and the CCR (HSC Sections 41865 and 41866; CCR, Title 17, Sections 80100 et. seq.).

- Smoke Management Program
- Rice Straw Burning Reduction Act of 1991
- Conditional Rice Straw Burning Permit Program for the Sacramento Valley Air Basin
- Assistance to districts in the SVAB in coordinating all air pollution control activities to ensure that the entire SVAB is, or will be, in compliance with the requirements of state and federal law.

SAN JOAQUIN VALLEY AIR BASIN

The SJVAB stretches over 300 miles from San Joaquin County in the north to western Kern County in the south. The area is bounded on the west by the Coast Ranges, on the east by the Sierra Nevada and on the south by the Tehachapi Mountains. One APCD, the San Joaquin Valley APCD, is located within the SJVAB.

Table 15-4. Sacramento Valley Air Basin Ambient Air Quality Standards Attainment Status by County

Pollutant	Shasta County	Tehama County	Glenn County	Colusa County	Yolo County	Solano County	Butte County	Sutter County	Yuba County	Sacramento County
State										
Ozone	Non-attainment	Non-attainment	Non-attainment (Transitional)	Non-attainment (Transitional)	Non-attainment (Serious)	Non-attainment (Serious)	Non-attainment (Transitional)	Non-attainment (Southern portion – Moderate; northern portion – Serious)	Non-attainment (Moderate)	Non-attainment (Serious)
PM_{10}	Non-attainment	Non-attainment	Non-attainment	Non-attainment	Non-attainment	Non-attainment	Non-attainment	Non-attainment	Non-attainment	Non-attainment
CO	Unclassified	Unclassified	Unclassified	Unclassified	Attainment	Attainment	Attainment	Attainment	Unclassified	Attainment
Federal										
Ozone 1-hour Standard	Unclassified/ Attainment	Unclassified/ Attainment	Unclassified/ Attainment	Unclassified/ Attainment	Non-attainment (Severe)	Non-attainment (Severe)	Non-attainment (Section 185A)	Non-attainment (Southern portion – severe; northern portion – Section 185A)	Not Available	Non-attainment (Severe)
Ozone 8-hour Standard	Unclassified/ Attainment	Unclassified/ Attainment	Unclassified/ Attainment	Unclassified/ Attainment	Non-attainment (Serious)	Non-attainment (Portion – Serious)	Non-attainment (Basic)	Non-attainment (Southern portion – serious; northern portion – basic)	Unclassified/ Attainment	Non-attainment (Serious)
PM_{10}	Unclassified/ Attainment	Unclassified/ Attainment	Unclassified/ Attainment	Unclassified/ Attainment	Unclassified/ Attainment	Unclassified/ Attainment	Unclassified/ Attainment	Unclassified/ Attainment	Unclassified/ Attainment	Non-attainment (Moderate; Request for attainment redesignation has been filed)
$PM_{2.5}$	Unclassified/ Attainment	Unclassified/ Attainment	Unclassified/ Attainment	Unclassified/ Attainment	Unclassified/ Attainment	Unclassified/ Attainment	Unclassified/ Attainment	Unclassified/ Attainment	Unclassified/ Attainment	Unclassified/ Attainment
CO	Unclassified	Unclassified	Unclassified	Unclassified	Unclassified	Unclassified	Unclassified	Unclassified	Unclassified	Unclassified

Source: (California Air Resources Board Website 2006b)

Most industry in the SJVAB is agricultural. Motor vehicles, forest products, oil production and refining industries are also sources of emissions. Nine percent of Californians live here, generating 12 percent of the vehicle miles driven and 14 percent of the state's air pollution. Overall, emissions levels have been decreasing since 1990, except for PM_{10} emissions, which are increasing, mainly due to fugitive dust(California Air Resources Board Website 2006c).

The estimated average annual emissions of several pollutants in the SJVAB, the SJVAB emissions as percentages of statewide totals and statewide totals for 2005 are presented in **Table 15-5**. In addition, the federal and state attainment status for each county within the SJVAB and each pollutant is presented in **Table 15-6.**

Table 15-5. San Joaquin Valley Air Basin – 2005 Estimated Annual Average Emissions

	CO	NO_X	SO_X	PM	PM_{10}	$PM_{2.5}$
San Joaquin Valley Air Basin (tons per day)	2,104.6	481.4	30.3	620.8	361.1	166.7
San Joaquin Valley Air Basin as a Percent of Statewide Total	15.3%	15.0%	10.0%	16.0%	16.3%	19.3%
Statewide Total (tons per day)	13,765.6	3,219.4	301.9	3,882.7	2,212.0	863.9
Source: (California Air Resources Board Website 2006b)						

SENATE BILL 700 (2003, FLOREZ)

California air quality management districts and air pollution control districts require any person that uses certain types of equipment that may emit air pollutants to obtain a permit. Prior to the enactment of Senate Bill 700 in 2003 (2003 Cal. Stats., c. 479), vehicles and certain types of equipment such as agricultural groundwater pumps were exempt from the permit requirement under California law. Senate Bill 700 eliminated that exemption for any equipment used in agricultural operations (see Health and Safety Code, §§39011.5, 42301.16). The law now requires permits to operate most agricultural equipment (see Health and Safety Code, §42300; Feather River AQMD Rule 4.1).

The bill generally defines "agricultural source" as a source, or group of sources, used in the production of crops or the raising of fowl or animals located on contiguous property and under common ownership or control, and specifically lists internal combustion engines, including portable and off-road engines as one of four categories of emissions sources that are part of the agricultural source.

15.1.5.3 LOCAL

At the local level, the Feather River AQMD has regulatory jurisdiction and air quality management responsibilities for Yuba and Sutter counties. The San Joaquin Valley AQMD has regulatory jurisdiction and air quality management responsibilities for the counties within the Export Service Area. The federal and state attainment status of both AQMDs is presented above in Tables 15-4 and 15-6. As previously discussed, the air quality in Yuba County is listed as unclassified or attainment for federal standards. For state standards, the district is classified as non-attainment for ozone (1-hour) and PM_{10}. The air quality in the San Joaquin Valley AQMD is non-attainment under both federal and state standards except for CO.

Table 15-6 San Joaquin Valley Air Basin Ambient Air Quality Standards Attainment Status by County

Pollutant	San Joaquin County	Stanislaus County	Merced County	Madera County	Fresno County	Kings County	Tulare County	western Kern County
State								
Ozone	Non-attainment	Non-attainment	Non-attainment	Non-attainment	Non-attainment	Non-attainment	Non-attainment	Non-attainment
PM_{10}	Non-attainment	Non-attainment	Non-attainment	Non-attainment	Non-attainment	Non-attainment	Non-attainment	Non-attainment
CO	Unclassified/ Attainment	Unclassified/ Attainment	Unclassified/ Attainment	Unclassified/ Attainment	Unclassified/ Attainment	Unclassified/ Attainment	Unclassified/ Attainment	Unclassified/ Attainment
Federal								
Ozone (1-hour Standard)	Non-attainment	Non-attainment	Non-attainment	Non-attainment	Non-attainment	Non-attainment	Non-attainment	Non-attainment
Ozone (8-hour Standard)	Non-attainment	Non-attainment	Non-attainment	Non-attainment	Non-attainment	Non-attainment	Non-attainment`	Non-attainment
PM_{10}	Non-attainment	Non-attainment	Non-attainment	Non-attainment	Non-attainment	Non-attainment	Non-attainment	Non-attainment
$PM_{2.5}$	Non-attainment	Non-attainment	Non-attainment	Non-attainment	Non-attainment	Non-attainment	Non-attainment	Non-attainment
CO	Unclassified	Unclassified	Unclassified	Unclassified	Unclassified	Unclassified	Unclassified	Unclassified

Source: (California Air Resources Board Website 2006b)

15.2 ENVIRONMENTAL IMPACTS/ENVIRONMENTAL CONSEQUENCES

15.2.1 IMPACT ASSESSMENT METHODOLOGY

15.2.1.1 YUBA REGION

Implementation of any of the alternatives considered in this EIR/EIS could potentially result in changes to air quality conditions within the Yuba Region (i.e., local study area). The changes in air quality would occur through the use of diesel powered pumps by individual growers to pump groundwater. However, as described in Section 15.1.1.1, the groundwater pumping air quality monitoring and improvement program that is currently underway within Yuba County will impact all of the project alternatives, and particularly the action alternatives under consideration. As a result, all of the CEQA/NEPA scenarios and comparisons will be evaluated with the context of the monitoring and improvement program.

15.2.1.2 CVP/SWP UPSTREAM OF THE DELTA REGION

Activities (i.e., groundwater extraction operations that generate emissions due to the fuel and energy required for pumping and transporting groundwater, and groundwater well pump conversions from diesel to electric motors) associated with the Proposed Project/Action or alternatives would not be expected to cause air quality impacts of measurable or detectable quantities in the CVP/SWP Upstream of Delta Region. Therefore, further evaluation of this region is not warranted.

15.2.1.3 DELTA REGION

As stated above, the air quality analysis focuses on Yuba County and to a larger extent, the SVAB. However, the SVAB does not extend into the Delta Region. Consequently, localized changes and potential air quality impacts in Yuba County would not be expected to be transferred to the Delta Region. Therefore, further evaluation of this region is not warranted.

15.2.1.4 EXPORT SERVICE AREA

The Proposed Project/Action and alternatives potentially could result in impacts to air quality in the Export Service Area due to changes in agricultural pumping of groundwater and associated changes in emissions. Agricultural pumping of groundwater is often powered by diesel engines, as described above in Section 15.2.1.1.

The CARB develops emissions inventory data, which provide estimates of emissions by sources. **Table 15-7** lists the estimate of emissions of various pollutants of irrigation internal combustion engines which use diesel fuel. As can be seen in Table 15-7, the estimates of the amount of emissions from diesel engines are relatively small percentages of SJVAB total emissions. The estimate for NOx is 16.7 tons per day, or 3.5 percent of the total estimate for the SJVAB. The estimate of PM_{10} is 1.2 tons per day or 0.3 percent of the total estimate for the SJVAB.

Table 15-7. San Joaquin Valley Air Basin Estimate of Emissions from Diesel Powered Internal Combustion Engines

	CO	NO_X	SO_X	PM	PM_{10}	$PM_{2.5}$
Irrigation Internal Combustion Engines Diesel/Distillate (tons per day)	6.2	16.7	1.8	1.2	1.2	1.1
As a Percent of SJVAB Total Emissions	0.3%	3.5%	5.8%	0.2%	0.3%	0.7%
San Joaquin Valley Air Basin (tons per day)	2,104.6	481.4	30.3	620.8	361.1	166.7
Source: (California Air Resources Board Website 2006b)						

15.2.2 IMPACT INDICATORS AND SIGNIFICANCE CRITERIA FOR AIR QUALITY

The criteria used to evaluate potential air quality effects typically are based on standardized air emission levels. Potential air quality effects are considered significant if the implementation of the alternative would cause substantial adverse changes to the baseline (ambient) air quality conditions in the affected area. The range of such changes includes producing pollutants that would either on their own, or when combined with baseline emissions:

- Cause a lowering of attainment status;
- Conflict with an adopted air quality management plan, policy, or program;
- Violate air quality standards or contribute to an existing or projected air quality violation.

Many of the standards and regulations used to manage air quality are not easily applied to the Proposed Project/Action and alternatives. Generally, air quality regulations target a project that consists of one point-source of pollution and is considered an ongoing concern. However, the sources of potential emissions that could result from the Proposed Project/Action and alternatives are geographically distributed and emission production is cyclical, occurring intermittently over a span of 10 years during the irrigation season of June through October.

Recognizing the aforementioned considerations, impact indicators and significance criteria applied to the impacts analysis are presented in **Table 15-8**.

Table 15-8. Impact Indicator and Significance Criteria for Air Quality

Impact Indicator	Significance Criteria
Emission of criteria pollutants in Yuba County during the irrigation season	No increase in emissions.
Emission of criteria pollutants in the Export Service Area during the irrigation season	Substantial adverse changes to baseline (ambient) air quality conditions.

To provide a simple metric for evaluating the potential for increases in emissions in the Yuba Region, the level of groundwater pumping that can achieved using the existing electrical pumps and offsets is 98 TAF per year, as shown on the subsequent charts that indicate groundwater pumping volumes.

The Feather River AQMD also has established thresholds of significance for construction activities, which allow for 25 pounds per day of the ozone precursors NO_x and ROG, and 80 pounds per day of PM_{10}. The significance criterion for this project is more stringent than these significance thresholds published by the Feather River AQMD. It is assumed that if no net emissions would occur, then the potential to cause or contribute to: (1) lowering of attainment

status, (2) violating air quality standards, or (3) conflicting with adopted plans, policies, or programs, also would be unlikely to occur as a result of the project, relative to the basis of comparison.

As discussed in Chapter 4, CEQA and NEPA have different legal and regulatory standards that require slightly different assumptions in the modeling runs used to compare the Proposed Project/Action and alternatives to the appropriate CEQA and NEPA bases of comparison in the impact assessments. Although only one project (the Yuba Accord Alternative) and one action alternative (the Modified Flow Alternative) are evaluated in this EIR/EIS, it is necessary to use separate NEPA and CEQA modeling scenarios for the Proposed Project/Action, alternatives and bases of comparisons to make the appropriate comparisons. As a result, the scenarios compared in the impact assessments below have either a "CEQA" or a "NEPA" prefix before the name of the alternative being evaluated. A detailed discussion of the different assumptions used for the CEQA and NEPA scenarios is included in Appendix D, Modeling Technical Memorandum.

As also discussed in Chapter 4, while the CEQA and NEPA analyses in this EIR/EIS refer to "potentially significant," "less than significant," "no" and "beneficial" impacts, the first two comparisons (CEQA Yuba Accord Alternative compared to the CEQA No Project Alternative and CEQA Modified Flow Alternative compared to the CEQA No Project Alternative) presented below instead refer to whether or not the proposed change would "unreasonably affect" the evaluated parameter. This is because these first two comparisons are made to determine whether the action alternative would satisfy the requirement of Water Code section 1736 that the proposed change associated with the action alternative "would not unreasonably affect fish, wildlife, or other instream beneficial uses."

15.2.3 ENVIRONMENTAL IMPACTS/ENVIRONMENTAL CONSEQUENCES OF THE CEQA YUBA ACCORD ALTERNATIVE COMPARED TO THE CEQA NO PROJECT ALTERNATIVE

Impact 15.2.3-1: Changes in criteria pollutant emissions that could result in adverse impacts to air quality in the Yuba Region

Figure 15-2 shows the estimated annual groundwater pumping volumes under the CEQA Yuba Accord Alternative. With the exception of 1924 and 1977, the annual amounts necessary to meet demands for groundwater substitution transfers and surface water deficiencies would be less than 98 TAF, the amount that can be pumped using electric pumps.

Because 1924 and 1977 are the only years during which the estimated annual groundwater pumping volumes under the CEQA Yuba Accord Alternative would exceed the total amount of groundwater that can be pumped each year with electric pumps, these are the only years for which further analyses are needed.

Figure 15-3 shows the estimated annual groundwater pumping volumes under the CEQA No Project Alternative.

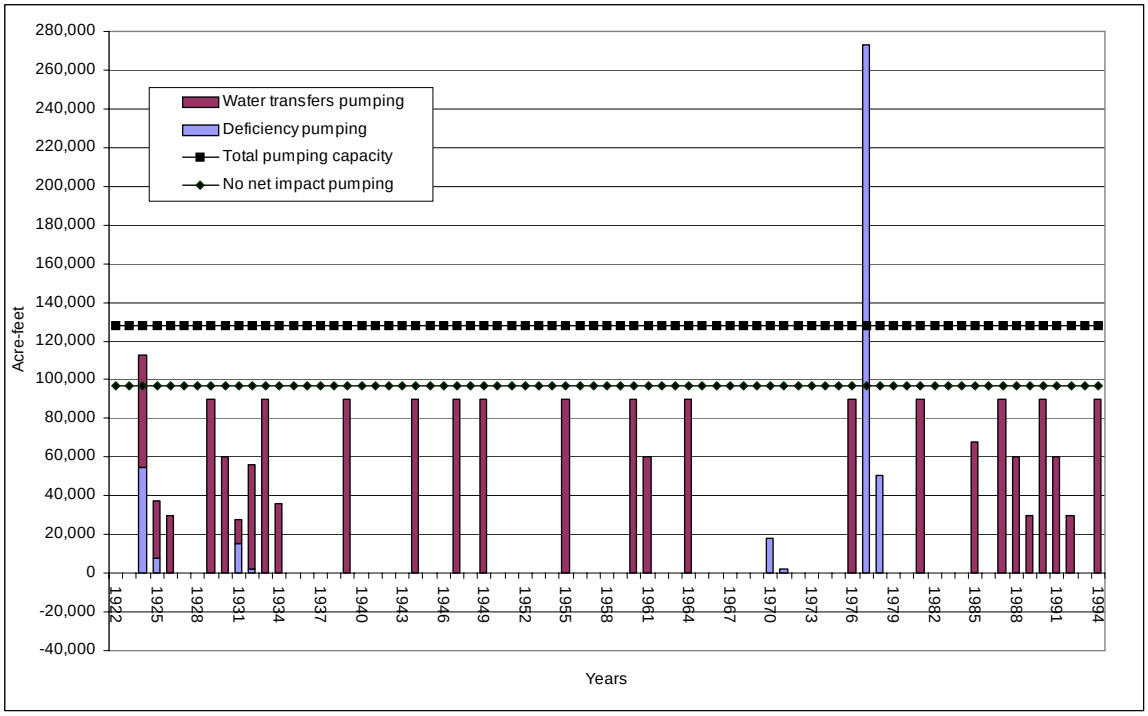

Figure 15-2. Estimated Volumes of Groundwater Pumped Under the CEQA Yuba Accord Alternative

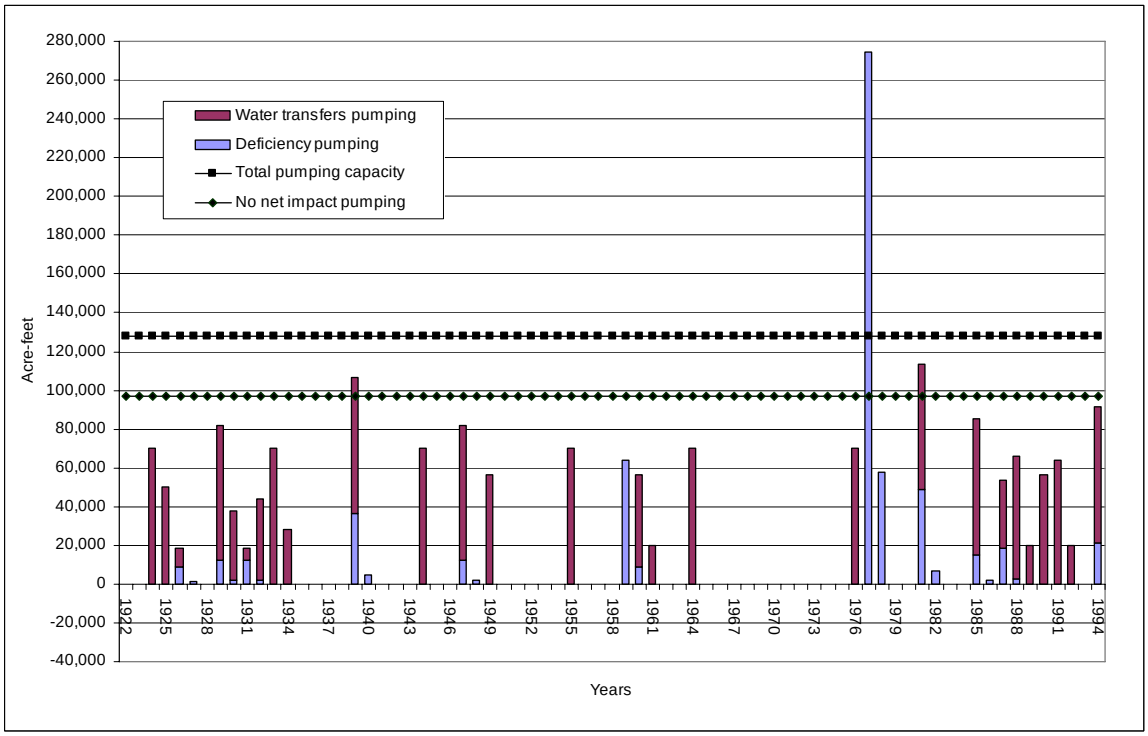

Figure 15-3. Estimated Volumes of Groundwater Pumped Under the CEQA No Project Alternative

In a year like 1924, if the total groundwater pumping needed for both deficiency pumping and water-transfer pumping would exceed the total amount of groundwater that can be pumped with electric pumps, and if the ongoing efforts to electrify existing diesel pumps had not made sufficient new capacity available to meet full deficiency pumping demands and the maximum potential groundwater-substitution volume, then the level of groundwater-substitution pumping would be reduced as necessary to ensure that no net impact to air quality from the groundwater-substitution program would occur (see Section 15.5).

In a year like 1977, no water transfer pumping would occur, and deficiency pumping would be the same under the CEQA Yuba Accord Alternative or the CEQA No Project Alternative.

With the implementation of the protective measures discussed in Section 15.5, there would be no net impact to air quality under the Yuba Accord Alternative. Therefore, the CEQA Yuba Accord Alternative, relative to the CEQA No Project Alternative, would not unreasonably affect air quality in the Yuba Region.

Impact 15.2.3-2: Changes in criteria pollutant emissions that could result in adverse impacts to air quality in the Export Service Area

The CEQA Yuba Accord Alternative could increase the water supply reliability of CVP and SWP users in the Export Service Area. Currently, CVP and SWP water users in the Export Service Area pump groundwater to supplement surface water supplies. The CEQA Yuba Accord Alternative could cause a reduction of emissions in the Export Service Area due to a reduction in agricultural pumping of groundwater.

The actual reduction in emissions from the reduction in groundwater pumping that would occur in the Export Service Area under the CEQA Yuba Accord Alternative is likely to be a small amount. Nonetheless, the CEQA Yuba Accord Alternative would have a positive impact to air quality in the Export Service Area. Therefore, the CEQA Yuba Accord Alternative, relative to the CEQA No Project Alternative, would not unreasonably affect air quality in the Export Service Area.

15.2.4 ENVIRONMENTAL IMPACTS/ENVIRONMENTAL CONSEQUENCES OF THE CEQA MODIFIED FLOW ALTERNATIVE COMPARED TO THE CEQA NO PROJECT ALTERNATIVE

Impact 15.2.4-1: Changes in criteria pollutant emissions that could result in adverse impacts to air quality in the Yuba Region

Figure 15-4 shows the estimated groundwater pumping volumes under the CEQA Modified Flow Alternative. With the exception of 1977, the electric-pumping capacity necessary to meet pumping demands for groundwater substitution transfers and deficiencies was in place as of 2005.

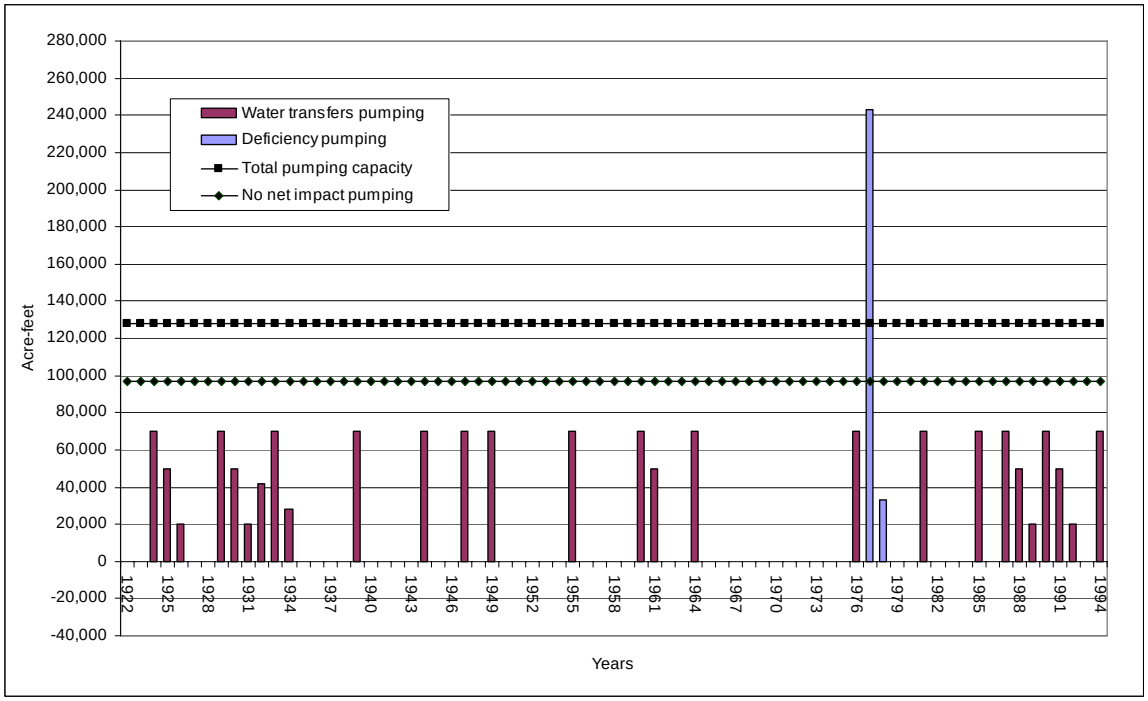

Figure 15-4. Estimated Volumes of Groundwater Pumped Under the CEQA Modified Flow Alternative

Because 1977 is the only year during which the estimated annual groundwater pumping volume under the CEQA Modified Flow Alternative would exceed the total amount of groundwater that can be pumped each year with electric pumps, it is the only year for which further analysis is needed. In a year like 1977, no water-transfer pumping would occur, and deficiency pumping would be lower under the CEQA Modified Flow Alternative than under the CEQA No Project Alternative. For these reasons, there would be no net impact to air quality under the CEQA Modified Flow Alternative, relative to the CEQA No Project Alternative. Therefore, the CEQA Modified Flow Alternative, relative to the CEQA No Project Alternative, would not unreasonably affect air quality.

Impact 15.2.4-2: Changes in criteria pollutant emissions that could result in adverse impacts to air quality in the Export Service Area

The CEQA Modified Flow Alternative is not anticipated to significantly change the water supply reliability of CVP and SWP users in the Export Service Area. Therefore, the CEQA Modified Flow Alternative relative to the CEQA No Project Alternative would not unreasonably affect air quality in the Export Service Area.

15.2.5 ENVIRONMENTAL IMPACTS/ENVIRONMENTAL CONSEQUENCES OF THE CEQA YUBA ACCORD ALTERNATIVE COMPARED TO THE CEQA EXISTING CONDITION

Impact 15.2.5-1: Changes in criteria pollutant emissions that could result in adverse impacts to air quality in the Yuba Region

Figure 15-2 shows the estimated groundwater pumping volumes under the CEQA Yuba Accord Alternative. **Figure 15-5** shows the estimated CEQA Existing Condition groundwater pumping volumes.

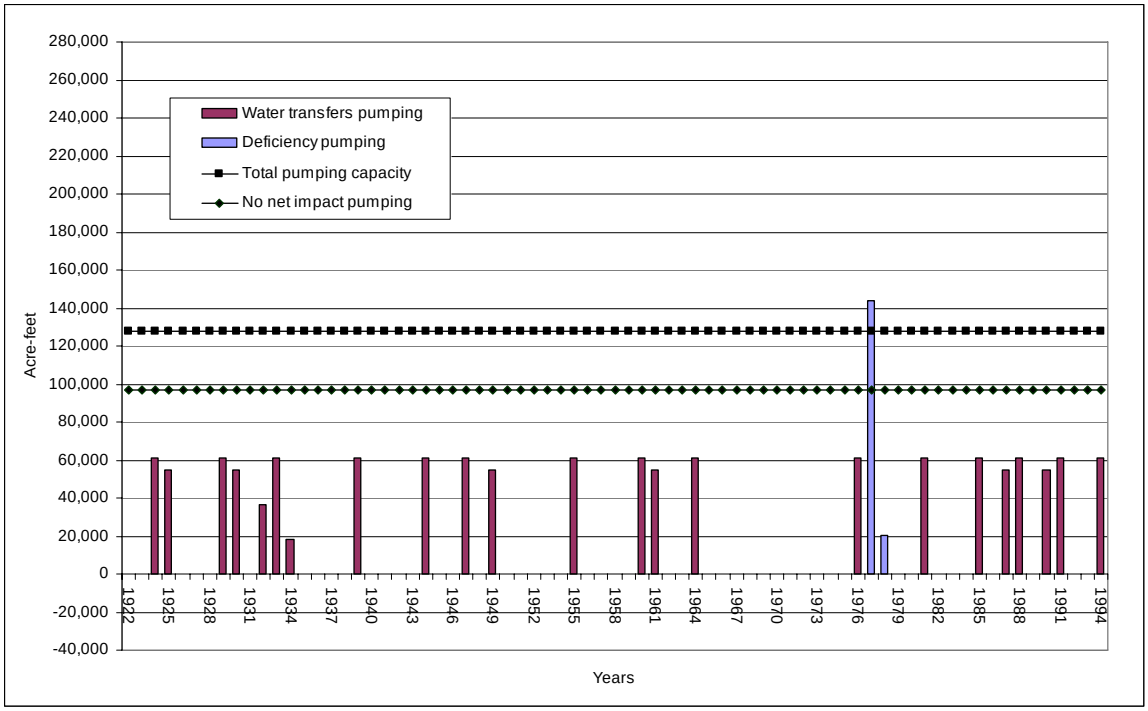

Figure 15-5. Estimated Volumes of Groundwater Pumped Under the CEQA Existing Condition

Because 1924 and 1977 are the only years during which the estimated annual groundwater pumping volumes under the CEQA Yuba Accord Alternative would exceed the total amount of groundwater that can be pumped each year with electric pumps, these are the only years for which further analyses are needed.

In a year like 1924, if the total groundwater pumping needed for both deficiency pumping and water-transfer pumping would exceed the total amount of groundwater that can be pumped with electric pumps, and if the ongoing efforts to electrify existing diesel pumps had not made sufficient new capacity available to meet full deficiency pumping demands and the maximum potential groundwater-substitution volume, then the level of groundwater-substitution pumping would be reduced as necessary to ensure that no net impact to air quality from the groundwater-substitution program would occur (see Section 15.5).

In a year like 1977, no water-transfer pumping would occur, but potential deficiency pumping would be greater under the CEQA Yuba Accord Alternative than under the CEQA Existing Condition. As described in Section 15.1.1.1, YCWA continues to implement an air quality improvement program associated with groundwater-substitution pumping. As a result, Yuba County will continue to increase the proportion of groundwater wells powered by nonpolluting sources; and although there may be an additional deficiency pumping under the CEQA Yuba Accord Alternative than under the CEQA Existing Condition, the net impact to air quality under the CEQA Yuba Accord Alternative would be improved relative to the CEQA Existing Condition.

With the implementation of the protective measures discussed in Section 15.5, there would be no net impact to air quality under the Yuba Accord Alternative. Therefore, the CEQA Yuba Accord Alternative, relative to the CEQA Existing Condition, would not significantly impact air quality.

Impact 15.2.5-2: Changes in criteria pollutant emissions that could result in adverse impacts to air quality in the Export Service Area

The CEQA Yuba Accord Alternative could increase the water supply reliability of CVP and SWP users in the Export Service Area. Currently, CVP and SWP water users in the Export Service Area pump groundwater to supplement surface water supplies. The CEQA Yuba Accord Alternative could cause a reduction of emissions in the Export Service Area due to a reduction in agricultural pumping of groundwater.

The actual reduction in emissions from the reduction in groundwater pumping that would occur in the Export Service Area under the CEQA Yuba Accord Alternative is likely to be a small amount. Nonetheless, the CEQA Yuba Accord Alternative would have a positive impact to air quality in the Export Service Area. Therefore, the CEQA Yuba Accord Alternative, relative to the CEQA Existing Condition, would result in a less than significant impact and may be beneficial to air quality in the Export Service Area.

15.2.6 ENVIRONMENTAL IMPACTS/ENVIRONMENTAL CONSEQUENCES OF THE CEQA MODIFIED FLOW ALTERNATIVE COMPARED TO THE CEQA EXISTING CONDITION

Impact 15.2.6-1: Changes in criteria pollutant emissions that could result in adverse impacts to air quality in the Yuba Region

Figure 15-4 shows the estimated groundwater pumping volumes under the CEQA Modified Flow Alternative. Figure 15-5 shows the estimated CEQA Existing Condition groundwater pumping volumes.

Because 1977 is the only year during which the estimated annual groundwater pumping volume under the CEQA Modified Flow Alternative would exceed the total amount of groundwater that can be pumped each year with electric pumps, it is the only year for which further analysis is needed. In a year like 1977, no water transfer pumping would occur, but potential deficiency pumping would be greater under the CEQA Modified Flow Alternative than under the CEQA Existing Condition.

As described in Section 15.1.1.1, YCWA continues to implement an air quality improvement program associated with groundwater-substitution pumping. As a result, Yuba County will continue to increase the proportion of groundwater wells powered by nonpolluting sources; and although there may be an additional deficiency pumping under the CEQA Modified Flow Alternative than under the CEQA Existing Condition, the net impact to air quality under the CEQA Modified Flow Alternative would be improved relative to the CEQA Existing Condition.

With the implementation of the protective measures discussed in Section 15.5, there would be no net impact to air quality under the CEQA Modified Flow Alternative. Therefore, the CEQA Modified Flow Alternative, relative to the CEQA Existing Condition, would not significantly impact air quality.

Impact 15.2.6-2: Changes in criteria pollutant emissions that could result in adverse impacts to air quality in the Export Service Area

The CEQA Modified Flow Alternative is not anticipated to significantly change the water supply reliability of CVP and SWP users in the Export Service Area. Therefore, the CEQA Modified Flow Alternative relative to the CEQA Existing Condition would result in a less than significant impact to air quality in the Export Service Area.

15.2.7 ENVIRONMENTAL IMPACTS/ENVIRONMENTAL CONSEQUENCES OF THE CEQA NO PROJECT/NEPA NO ACTION ALTERNATIVE COMPARED TO THE CEQA EXISTING CONDITION/NEPA AFFECTED ENVIRONMENT

As discussed in Chapter 3, the key elements and activities (e.g., implementation of the RD-1644 Long-term instream flow requirements) for the CEQA No Project Alternative would be the same for the NEPA No Action Alternative. The primary differences between the CEQA No Project and NEPA No Action alternatives are various hydrologic and other modeling assumptions (see Section 4.5 and Appendix D). Because of these differences between the No Project and No Action alternatives, these alternatives are distinguished as separate alternatives for CEQA and NEPA evaluation purposes.

Based on current plans and consistent with available infrastructure and community services, the CEQA No Project Alternative in this EIR/EIS is based on current environmental conditions (e.g., project operations, water demands, and level of land development) plus potential future operational and environmental conditions (e.g., implementation of the RD-1644 Long-term instream flow requirements in the lower Yuba River) that probably would occur in the foreseeable future in the absence of the Proposed Project/Action or another action alternative. The NEPA No Action Alternative also is based on conditions without the proposed project, but uses a longer-term future timeframe that is not restricted by existing infrastructure or physical and regulatory environmental conditions. The differences between these modeling characterizations and assumptions for the CEQA No Project and the NEPA No Action alternatives, including the rationale for developing these two different scenarios for this EIR/EIS, are explained in Chapter 4[4].

Although implementation of the RD-1644 Long-term instream flow requirements would occur under both the CEQA No Project and the NEPA No Action alternatives, the resultant model outputs for both scenarios are different because of variations in the way near-term and long-term future operations are characterized for other parameters in the CEQA and NEPA assumptions. As discussed in Chapter 4, the principal difference between the CEQA No Project Alternative and the NEPA No Action Alternative is that the NEPA No Action Alternative includes several potential future water projects in the Sacramento and San Joaquin valleys (e.g., CVP/SWP Intertie, FRWP, SDIP and a long-term EWA Program or a program equivalent to the EWA), while the CEQA No Project Alternative does not. Because many of the other assumed conditions for these two scenarios are similar, the longer-term analysis of the NEPA No Action Alternative compared to the NEPA Affected Environment builds upon the nearer-term analysis of the CEQA No Project Alternative compared to the CEQA Existing Condition.

Because the same foundational modeling base (OCAP Study 3) was used to characterize near-term conditions (2001 level of development) both the CEQA No Project Alternative and the CEQA Existing Condition, it was possible to conduct a detailed analysis to quantitatively evaluate the hydrologic changes in the Yuba Region and the CVP/SWP system that would be expected to occur under these conditions. Building on this CEQA analysis, the analysis of the NEPA No Action Alternative compared to the NEPA Affected Environment consists of two

[4] For modeling purposes related to CEQA analytical requirements, OCAP Study 3 (2001 level of development) is used as the foundational study upon which the modeling scenarios for the CEQA No Project Alternative and the CEQA Existing Condition were developed. For modeling purposes related to NEPA analytical requirements, OCAP Study 5 (2020 level of development) is used as the foundational study upon which the modeling scenarios for the NEPA No Action Alternative was developed.

components: (1) an analysis of near-term future without project conditions quantified through the CEQA No Project Alternative, relative to the CEQA Existing Condition; and (2) a qualitative analysis of longer-term future without project conditions (the NEPA No Action Alternative)[5].

15.2.7.1 CEQA NO PROJECT ALTERNATIVE COMPARED TO THE CEQA EXISTING CONDITION

Impact 15.2.7.1-1: Changes in criteria pollutant emissions that could result in adverse impacts to air quality in the Yuba Region

Figure 15-3 shows the estimated groundwater pumping volumes under the CEQA No Project Alternative. Figure 15-5 shows the estimated CEQA Existing Condition groundwater pumping volumes.

Because 1977 is the only year during which the estimated annual groundwater pumping volume under the CEQA No Project Alternative would exceed the total amount of groundwater that can be pumped each year with electric pumps, it is the only year for which further analysis is needed. In a year like 1977, no water transfer pumping would occur, but potential deficiency pumping would be greater under the CEQA No Project Alternative than under the CEQA Existing Condition. To the extent that this additional pumping would be through electric pumps, no impacts to air quality would occur.

To the extent that additional deficiency pumping occurred under the CEQA No Project Alternative, and occurred with diesel pumps, it could cause significant and unavoidable impacts to air quality.

Impact 15.2.7.1-2: Changes in criteria pollutant emissions that could result in adverse impacts to air quality in the Export Service Area

Under the CEQA No Project Alternative, decreases in the water supply reliability of CVP and SWP users in the Export Service Area could occur. Currently, CVP and SWP water users in the Export Service Area pump groundwater to supplement surface water supplies. Groundwater pumping could increase to meet demands if surface water supplies are not available to CVP and SWP water users. Under the CEQA No Project Alternative, increases of emissions in the Export Service Area could occur to the extent that increases in agricultural pumping of groundwater occur.

These potential minor increases in emissions under the CEQA No Project Alternative would be insignificant and likely would not result in the lowering of attainment status, conflict with adopted air quality policies or programs, or violate any approved standards. Therefore, the CEQA Yuba Accord Alternative, relative to the CEQA Existing Condition, would result in a less than significant impact to air quality in the Export Service Area.

15.2.7.2 NEPA NO ACTION ALTERNATIVE COMPARED TO THE NEPA AFFECTED ENVIRONMENT

In the Yuba Region, the primary differences between the NEPA No Action Alternative and the NEPA Affected Environment are changes in lower Yuba River flows associated with the implementation of the RD-1644 Long-term instream flow requirements, to replace the RD-1644

[5] The second analytical component cannot be evaluated quantitatively due to the differences in the underlying baseline assumptions for OCAP Study 3 and OCAP Study 5.

Interim instream flow requirements, implementation of the Wheatland Project, which will increase surface water diversions at Daguerre Point Dam because of decreases in groundwater pumping volumes, and groundwater substitution pumping associated with the SVWMP.

In the Yuba Region, the primary differences between the CEQA No Project and the Existing Condition are implementation of the RD-1644 Long-term instream flow requirements and implementation the Wheatland Project. Therefore, in the Yuba Region, assumptions regarding the volume of SVWMP groundwater substitution pumping that may occur in the future are the only difference between the NEPA No Action and the CEQA No Project alternatives. Although groundwater substitution transfers may take place under different programs (single-year transfers versus SVWMP), the total volume of groundwater substitution is similar. Because the total groundwater substitution pumping that would occur in the Yuba Region between the CEQA No Project Alternative and the CEQA Existing Condition is similar to the total groundwater substitution pumping that would occur under the NEPA No Action Alternative compared to the NEPA Affected Environment, these potential effects to air quality already have been evaluated in the quantitative analyses that is presented in Section 15.2.7.1 above. Trends in evaluation parameters previously presented for the CEQA No Project Alternative relative to the CEQA Existing Condition (Appendix F4, 2 vs. 1) are similar to the comparison of the NEPA No Action Alternative relative to the NEPA Affected Environment, and are not repeated here.

The NEPA No Action Alternative includes several additional proposed projects in the project study area that are not included in the CEQA No Project Alternative; however, these other proposed projects would not affect air quality in the Yuba Region and, thus, are only discussed in the context of the Export Service Area.

The NEPA No Action Alternative considers 2020 level of development in the Sacramento Valley and increased SWP Table A demands. The projects included in the NEPA No Action Alternative include water supply projects to meet increasing demand (FRWP, American River diversions in accordance with the Water Forum), water storage and conveyance projects (e.g., SDIP[6]), water transfer and acquisition programs (long-term EWA Program or a program equivalent to the EWA), and other projects related to CVP/SWP system operations (e.g., CVP/SWP Integration, FRWP).

The proposed projects included under the NEPA No Action Alternative could result in operational changes for the CVP, SWP, and local water supply systems, and could result in new diversions from upstream or Delta sources, changes to reservoir operations, river and channel flows, river and channel diversions and pumping and power generation facilities in the Export Service Area.

15.2.8 ENVIRONMENTAL IMPACTS/ENVIRONMENTAL CONSEQUENCES OF THE NEPA YUBA ACCORD ALTERNATIVE COMPARED TO THE NEPA NO ACTION ALTERNATIVE

Impact 15.2.8-1: Changes in criteria pollutant emissions that could result in adverse impacts to air quality in the Yuba Region

Figure 15-6 shows the volumes of water pumped under the NEPA No Action Alternative. **Figure 15-7** shows the volume of water pumped under the NEPA Yuba Accord Alternative.

[6] The SDIP includes a maximum pumping rate of 8,500 cfs at the Banks Pumping Plant.

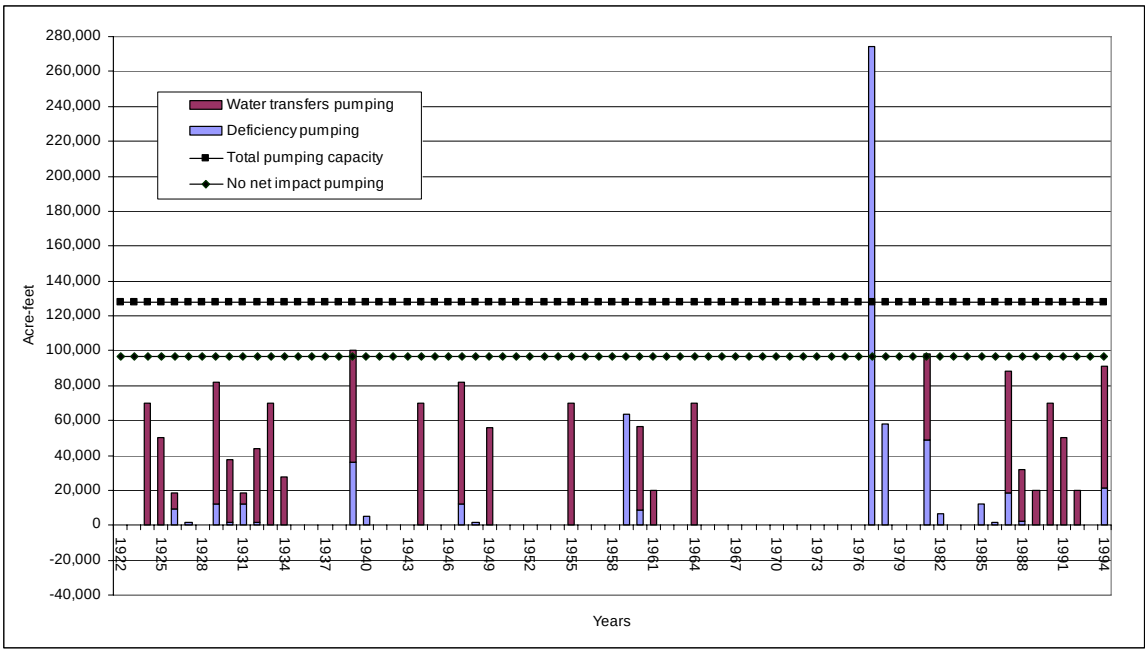

Figure 15-6. Estimated Volumes of Groundwater Pumped Under the NEPA No Action Alternative

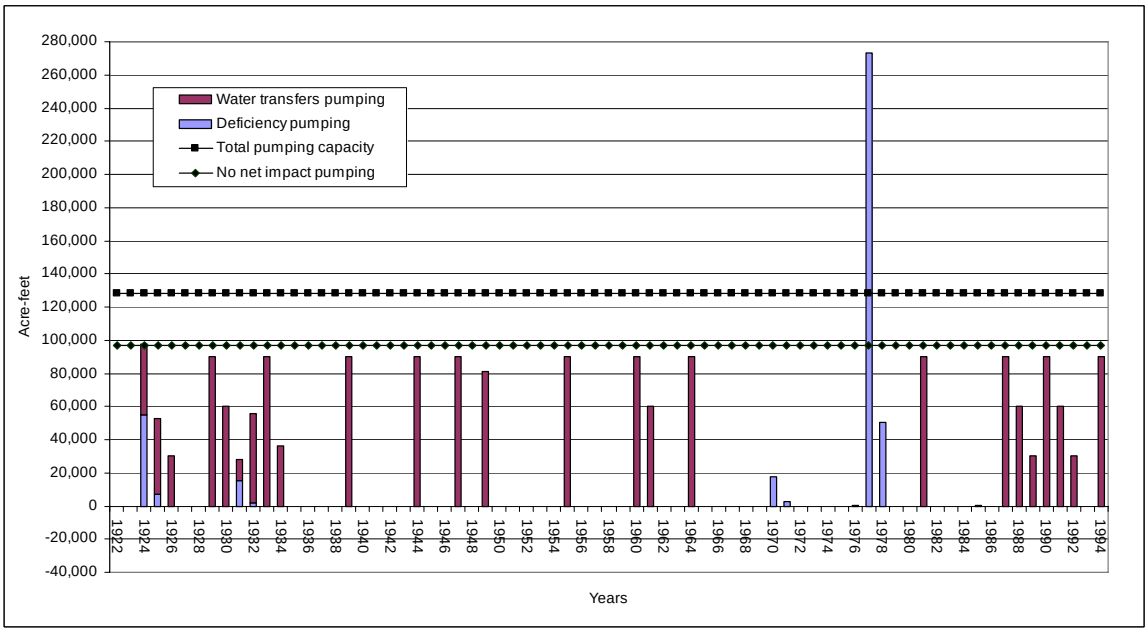

Figure 15-7. Estimated Volumes of Groundwater Pumped Under the NEPA Yuba Accord Alternative

Because 1977 is the only year during which the estimated annual groundwater pumping volume under the NEPA Yuba Accord Alternative would exceed the total amount of groundwater that can be pumped each year with electric pumps, it is the only year for which further analysis is needed. In a year like 1977, no water transfer pumping would occur, and deficiency pumping would be the same under the NEPA Yuba Accord Alternative and under the NEPA No Action Alternative. For these reasons, impacts to air quality would be less than significant under the NPEA Yuba Accord Alternative, relative to the NEPA No Action Alternative.

Impact 15.2.8-2: Changes in criteria pollutant emissions that could result in adverse impacts to air quality in the Export Service Area

The NEPA Yuba Accord Alternative could increase the water supply reliability of CVP and SWP users in the Export Service Area. Currently, CVP and SWP water users in the Export Service Area pump groundwater to supplement surface water supplies. The CEQA Yuba Accord Alternative could cause a reduction of emissions in the Export Service Area due to a reduction in agricultural pumping of groundwater.

The actual reduction in emissions from the reduction in groundwater pumping that would occur in the Export Service Area under the NEPA Yuba Accord Alternative is likely to be a small amount. Nonetheless, the NEPA Yuba Accord Alternative would have a positive impact to air quality in the Export Service Area. Therefore, the NEPA Yuba Accord Alternative, relative to the NEPA No Action Alternative, would result in a less than significant impact and may be beneficial to air quality in the Export Service Area.

15.2.9 ENVIRONMENTAL IMPACTS/ENVIRONMENTAL CONSEQUENCES OF THE NEPA MODIFIED FLOW ALTERNATIVE COMPARED TO THE NEPA NO ACTION ALTERNATIVE

Impact 15.2.9-1: Changes in criteria pollutant emissions that could result in adverse impacts to air quality in the Yuba Region

Figure 15-8 shows the volume of water pumped under the NEPA Modified Flow Alternative.

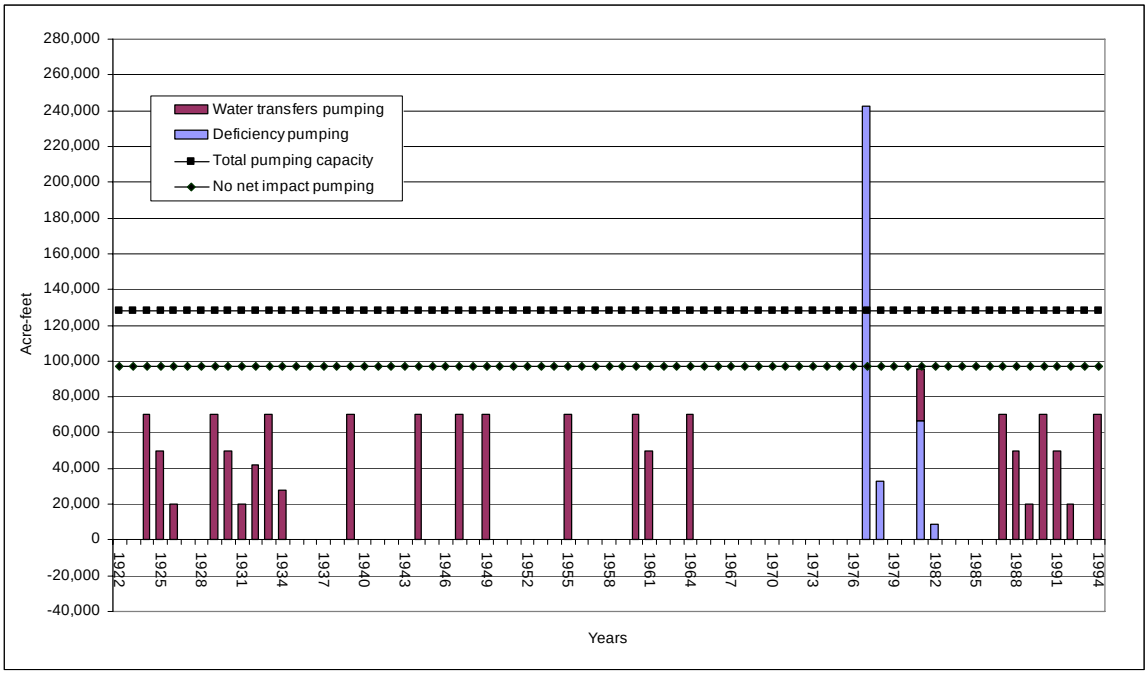

Figure 15-8. Estimated Volumes of Groundwater Pumped Under the NEPA Modified Flow Alternative

Because 1977 is the only year during which the estimated annual groundwater pumping volume under the NEPA Modified Flow Alternative would exceed the total amount of groundwater that can be pumped each year with electric pumps, it is the only year for which further analysis is needed. In a year like 1977 no water transfer pumping would occur, and deficiency pumping would be lower under the NEPA Modified Flow Alternative than under

the NEPA No Action Alternative. For these reasons, impacts to air quality would be less than significant under the NEPA Modified Flow Alternative, relative to the NEPA No Action Alternative.

Impact 15.2.9-2: Changes in criteria pollutant emissions that could result in adverse impacts to air quality in the Export Service Area

The NEPA Modified Flow Alternative is not anticipated to significantly change the water supply reliability of CVP and SWP users in the Export Service Area. Therefore, the NEPA Modified Flow Alternative relative to the NEPA No Action Alternative would result in a less than significant impact to air quality in the Export Service Area.

15.3 CUMULATIVE IMPACTS

For CEQA, the purpose of the cumulative analysis is to determine whether the incremental effects of the Proposed Project (Yuba Accord Alternative) would be expected to be "cumulatively considerable" when viewed in connection with the effects of past projects, other current projects, and probable future projects (Public Resources Code section 21083, subdivision (b)(2)).[7]

For NEPA, the scope of an EIS must include "*cumulative actions, which when viewed with other proposed actions have cumulatively significant impacts and should therefore be discussed in the same impact statement*" (40 CFR §1508.25(a)(2)).

Because the CEQ regulations for implementing NEPA and the CEQA guidelines contain very similar requirements for analyzing, and definitions of, cumulative impacts, the discussions of cumulative impacts of the Yuba Accord Alternative Cumulative Condition relative to the Existing Condition is the basis for evaluation of cumulative impacts for both CEQA and NEPA. In addition, an analysis of the Modified Flow Alternative Cumulative Condition relative to the Existing Condition is provided to fulfill NEPA requirements.

For air quality, there would be no net impacts resulting from the Yuba Accord Alternative or the Modified Flow Alternative, relative to the Existing Condition; any potential air quality impacts that would occur as a result of an increase in emissions due to implementation of either the Yuba Accord or Modified Flow alternatives would be mitigated to a net change of zero. Thus, there would be no potential cumulative impacts resulting from implementation of either the Yuba Accord Alternative or the Modified Flow Alternative.

15.4 POTENTIAL CONDITIONS TO SUPPORT APPROVAL OF YCWA'S WATER RIGHTS PETITION

Because any potential air quality impacts would be avoided or reduced by ensuring that there would be no net increase in emissions (see Sections 15.1.1.1 and 15.5), no unreasonable adverse effects to air quality would occur under the Proposed Project/Action or an action alternative. Therefore, no other impact avoidance measures or protective conditions are identified for the SWRCB's consideration in determining whether or not to approve YCWA's petitions to implement the Yuba Accord.

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[7] The "*Guide to the California Environmental Quality Act*" (Remy *et al.* 1999) states that "*…although a project may cause an "individually limited" or "individually minor" incremental impact that, by itself, is not significant, the increment may be "cumulatively considerable", and thus significant, when viewed against the backdrop of past, present, and probable future projects.*" (CEQA Guidelines, § 15064, subd. (i)(l), 15065, subd. (c), 15355, subd. (b)).

15.5 MITIGATION MEASURES/ENVIRONMENTAL COMMITMENTS

For the Yuba Accord Alternative, all water transfers would be subject to the various Yuba Accord agreements, including the Conjunctive Use Agreements. Pursuant to the agreements, all new wells developed for use in the program would use electric motors. Additionally, under both the Yuba Accord and Modified Flow alternatives, YCWA would continue to pursue the ability to make groundwater substitution transfers to EWA, DWR and Reclamation, which would require that YCWA make these transfers with no net impact to air quality. YCWA and the Member Units have been engaged in a groundwater pumping air quality monitoring and improvement program with the purpose of both continuing to improve air quality in Yuba County as well as meet the practical goal of being able to transfer water without constraint by air quality.

In addition, YCWA will undertake the following mitigation measure during years in which a combination of groundwater-substitution and deficiency pumping has the potential to exceed that threshold of no net impacts to the air quality:

Mitigation Measure 15-1: Provide certification documentation to Reclamation and DWR indicating that groundwater pumping sources would not increase emissions, to ensure that no net impacts to air quality would occur.

To ensure that no net impact air quality would result from groundwater substitution pumping in addition to deficiency pumping during extremely dry years, YCWA will provide to Reclamation and DWR a statement, with appropriate supporting documentation, demonstrating that the total volume of groundwater to be pumped within Yuba County can be conducted using pumping sources that will not contribute to a air quality impacts. Such certification shall be furnished to the Technical Committee, pursuant to the requirements of the Yuba Accord agreements, as described in Section 15.1.1.1, above.

Impact Significance After Mitigation: Less than significant.

15.6 POTENTIALLY SIGNIFICANT UNAVOIDABLE IMPACTS

It is possible that levels of deficiency pumping in extremely dry years (such as 1977) under the CEQA No Project Alternative, relative to the CEQA Existing Condition, may invoke a potentially significant impact by inducing an increase in net emissions resulting from additional groundwater pumping utilizing diesel powered pumps. However, there are no significant unavoidable impacts to air quality associated with the implementation of the Proposed Project/Action or an action alternative.