

*DWR and Reclamation must monitor the effects of diversions and SWP and CVP operations to ensure compliance with existing water quality standards. Monitoring stations are shown in Figure 4-1.*

*Among the objectives established in the 1995 WQCP and D-1641 are the “X2” objectives. D-1641 mandates the X2 objectives so that the State Water Board can regulate the locations of the Delta estuary’s salinity gradient during the months of February–June. X2 is the position in the Delta where the electrical conductivity (EC) level, or salinity, of Delta water is 2 parts per thousand. The location of X2 is used as a surrogate measure of Delta ecosystem health. For the X2 objective to be achieved, the X2 position must remain downstream of Collinsville in the Delta (shown in Figure 4-1) for the entire 5- month period, and downstream of other specific locations in the Delta on a certain number of days each month from February through June. This means that Delta outflow must be at certain specified levels at certain times—which can limit the amount of water the SWP may pump at those times at its Harvey O. Banks Pumping Plant in the Delta. Because of the relationship between seawater intrusion and interior-Delta water quality, meeting the X2 objective also improves water quality at Delta drinking-water intakes; however, meeting the X2 objectives can require a relatively large volume of water for outflow during dry months that follow months with large storms.*

*The 1995 WQCP and D-1641 also established an export/inflow (E/I) ratio. The E/I ratio, presented in Table 3 of the 1995 WQCP (SWRCB 1995:18– 22), is designed to provide protection for the fish and wildlife beneficial uses in the Bay-Delta estuary (SWRCB 1995:15). The E/I ratio limits the fraction of Delta inflows that are exported. When other restrictions are not controlling, Delta exports are limited to 35% of total Delta inflow from February through June and 65% of inflow from July through January.”*

## **Section VI: Climate Change**

Within the five year horizon of this Plan, the District is much more concerned regarding the current reliability (or lack thereof) of the State Water Project than it is about climate change. However, the potential effects of climate change, which DWR projects to impact both the District’s local area and result in statewide changes that could affect the State Water Project and its water supplies in the longer term, are a substantial concern beyond the planning horizon of this Plan.

DWR estimates indicate that by 2050 the Sierra Nevada snowpack, which provides 65 percent of California’s water supply, will be significantly reduced. Much of the precipitation is expected to fall as rain instead of snow during winter and cannot be stored in our current water system for later use. The climate is also expected to become more variable and extreme, bringing more droughts and floods. Thus the District will need to be prepared to adapt to greater variability in weather patterns.

## **A. Potential Climate Change Effects**

Within the next 20 years, DWR expects that water supplies, water demand, sea level, and the occurrence and increased severity of floods will be affected by climate change. Some of these potential changes are presented below.

The District will consider the following climate change effects, many of which are already documented in California, and reviewed in the latest State Water Project Reliability Report prepared by DWR.

### **1. Water Demand**

Shorter winters, more hot days and nights, and a longer irrigation season will increase water demand in the District, and increase competition for water by others.

### **2. Water Supply and Quality**

Reduced snowpack, shifting spring runoff to earlier in the year has the potential to impact water supply and quality.

### **3. Sea Level Rise**

The Delta, which is in the hub of the SWP could be at greater risk to increased salinity should sea level rise occur. Sea level could continue to rise if warming of the oceans continues. This could affect Delta levee stability in low-lying areas.

### **4. Disaster**

Disasters may become more frequent if climate change continues as some scientists believe.

## **B. Specific Points to Consider**

As the District continues to address near-term periods of water deficiency from the State Water Project during the five years of this planning cycle, it will consider the following potential climate change impacts projected by DWR in its longer term plans and work with DWR and State Water Contractors in planning for:

### **1. Irrigation Demand**

Irrigation demand may increase if temperatures rise and rainfall becomes more variable.

### **2. Permanent Crops**

Permanent crops, which make up the majority in the District, may be adversely affected by climate change and may be more difficult to shift to alternative crops, causing reduced flexibility for adapting to changing climatic conditions.

### **3. Flooding Risk**

Flooding risk may increase as a result of more severe rainfall patterns and warmer winter rains. This could affect water supply and conveyance of State and local water distribution facilities.

### **4. Snowpack**

Snowpack may significantly diminish if the climate warms. Diminished snowfall in the mountains and earlier runoff may result in reduced SWP water supply and other sources derived from Sierra Nevada Snowpack.

### **5. The Sacramento-San Joaquin River Delta**

The Sacramento-San Joaquin River Delta could be vulnerable to impacts of climate change, if it occurs. One impact could be sea level rise. Higher sea levels could make it more difficult to export water from the Delta with the existing infrastructure and may result in reduced water deliveries over time.