

# Supporting Analysis & Calculations

## Introduction

On May 18, 2016, the State Water Resources Control Board (SWRCB) amended its emergency water conservation regulation. The amended regulation now includes a supply-based approach that recognizes the unique water supply conditions of each water supplier. The new supply-based approach considers the necessity for a conservation standard for the period of June 2016 through January 2017, based on each water supplier's specific circumstances and water supplies. The new regulation requires individual urban water suppliers to self-certify the sufficiency of available water supplies using a calculation methodology prescribed in the amended emergency water conservation regulation.

The SWRCB's supply sufficiency calculation is based on a series of conservative assumptions including projecting, for the purpose of the calculation, available supplies based on three additional years of drought, with the third year, 2019, serving as the evaluation year that determines the conservation standard for the period of June 2016 through January 2017. The calculation specifies the use of hydrology from 2013, 2014, and 2015, to project water supplies for 2017, 2018, and 2019. Very conservative demand projections for the three-year period are based on a water supplier's average potable water use in 2013 and 2014 – a period where water use was significantly higher than current water demand trends. Projected water supplies and demands for 2019 are compared to determine whether a surplus or deficit exists. If the projected water supplies meet or exceed the demand, the water conservation standard is set at zero for the period of June 2016 through January 2017. If demand exceeds available water supplies, the conservation standard is equivalent to the percentage of the water supply deficit.

The SWRCB's supply sufficiency calculation for the Sweetwater service area is shown in the formula below:

$$\text{Sweetwater Authority Water Use} - \left( \text{Imported Available Supplies} + \text{Ground water Supplies} + \text{Brackish GW Desal Supplies} \right) = \text{Supply Adequacy}$$

The calculation is used to show that Sweetwater Authority supplies, when combined with the San Diego County Water Authority water supplies, are sufficient to meet demand.

## Supporting Analysis and Calculation Requirement

The SWRCB Water Supply Reliability Certification and Data Submission Form requires, as part of Step 5, supporting documentation that validates all analyses and calculations used to project supplies and demands for the supply sufficiency calculation. This section provides documentation and an explanation of the information and methodology.

## Supply

The Sweetwater Authority's water sources include imported water from San Diego County Water Authority, surface water from Sweetwater Reservoir, potable groundwater from the National City Wells and brackish groundwater desalination from the Richard A. Reynolds Desalination Facility.

**San Diego County Water Authority (SDCWA)** - SDCWA has calculated and certified that they can supply the following amounts of imported water to Sweetwater Authority:

2017 = 19,504 AF

2018 = 19,370 AF

2019 = 19,959 AF

SDCWA's backup calculations of the above supplies can be found in attached SDCWA's Worksheet 2 and attached Supporting Analysis and Calculations.

**Sweetwater Reservoir Surface Supply** – It is assumed that no surface water is available from the Sweetwater Reservoir system during 2017 – 2019.

**National City Wells** – The National City well produced the following water during Fiscal Year 2013 – 2015.

FY 2013 = 2,480 AF

FY 2014 = 1,956 AF

FY 2015 = 1,914 AF

The backup documentation of the supply for the above production has been reproduced from the original production documents. The documents are attached.

Therefore, Sweetwater Authority will use the following available supply from the National City Wells in Worksheet 1:

WY 2017 = 2,480 AF

WY 2018 = 1,956 AF

WY 2019 = 1,914 AF

**Richard A. Reynolds Brackish Groundwater Desalination Facility (Desal Facility)** – The Desal Facility produced the following water during Fiscal Year 2013 – 2014:

FY 2013 = 3,211 AF

FY 2014 = 3,051 AF

FY 2015 = 3,076 AF

The backup documentation of the supply for the above production has been reproduced from the original documents sent to SDCWA for the Deal Facility. The documents are attached.

An expansion is currently in construction to expand the Desal Facility from a design capacity of 3,600 AF per year to 8,800 AF per year. Four of the five new wells have been constructed for the expansion. Three wells have been tested at 2,500 gpm and will be equipped at 1,500 gpm and the fourth well was tested at 1,200 gpm and will be equipped at 8,00 gpm. The fifth well is nearly complete and it is estimated to produce 1,500 gpm. A US Geological Survey study has concluded that the safe yield of the aquifer is approximately 40,000 AF per year, which is well below the amount of water that will be extracted to supply the expansion project and all other water producers extracting water from the aquifer.

The expanded facility will begin full production approximately May 1, 2017. This project is a partnership of the Sweetwater Authority and the City of San Diego and the 8,800 AF per year will be divided as follows:

Sweetwater Authority = 6,200 AF

City of San Diego = 2,600 AF

Therefore, the Sweetwater Authority has indicated the following "Water Available" in Worksheet 1 for the subject years:

WY 2017 = 5,300 AF (May – December)

WY 2018 = 6,200 AF

WY 2019 = 6,200 AF

The City of San Diego will indicate their supply from the Desal Facility Expansion in their Water Supply Reliability Certification form.