

Technical Memorandum

To: Mario Iglesias
Nipomo Community Services District

From: Robert Lepore
Mike Nunley, PE

Date: June 21, 2016

Re: **Water Supply Reliability Certification - Supporting Analysis**

1. INTRODUCTION

Michael K. Nunley & Associates (MKN) was retained by the Nipomo Community Services District (NCSD or District) to assist in the preparation of the Water Supply Reliability Certification and Data Submission required by the State Water Resources Control Board (SWRCB). Self-certification of supply reliability is required of urban water retailers by the State Water Board no later than June 22, 2016.

The scope of services for this project included the following:

- Review and preparation of data for Water Supply Reliability and Data Submission form;
- Preparation of Water Supply Resources Spreadsheet;
- Preparation of Supporting Analysis technical memorandum summarizing historical production and anticipated supply availability.

2. OVERVIEW

Per the SWRCB: On May 18, 2016, the State Water Board adopted an emergency water conservation regulation that replaces the February 2 emergency regulation. The May 2016 regulation that will be in effect from June 2016 through January 2017 requires locally developed conservation standards based upon each agency's specific circumstances. It replaces the prior percentage reduction-based water conservation standard with a localized "stress test" approach. These standards require local water agencies to ensure a three-year supply assuming three more dry years like the ones the state experienced from 2012 to 2015.

Water suppliers are required to establish a conservation standard that will reduce total potable water production by the percentage by which the supplier's total potable water supply is insufficient to meet its expected annual demand over the next three years, assuming the annual demand over the next three years is the average of years 2013 and 2014 and assuming rainfall for water years (WY) 2017-2019 will be the same as WYs 2013-2015.

3. PROJECTED WATER DEMANDS 2017-2019

Based on the requirements of the Water Supply Reliability assessment the projected water demands for 2017-2019 are assumed to be similar to the 2-year average demand for 2013-2014 (2,420 acre-foot and 2,309 acre-foot respectively based on submitted Department of Water Resources Form 38 reports for metered delivery). For NCS D the projected water demand, based on the requirements of this assessment, is estimated to be 2,352 acre-foot per (AFY) annually.

It should be noted that NCS D pumps groundwater from the Santa Maria River Valley Groundwater Basin, which is an adjudicated basin managed by the Nipomo Mesa Management Area (NMMA). Based on groundwater conditions within the Santa Maria River Valley Groundwater Basin and the requirements of the NMMA Water Shortage Contingency Plan (WSCP), NCS D is current imposed with a mandatory supply reduction of 30% (Stage III see **Table 4-1**). However, it is anticipated that as of July 1, 2016 NMMA will release an official statement declaring Stage IV conditions within the management area requiring a 50% mandatory reduction in groundwater pumping.

Per the requirements of the NMMA WSCP, NCS D's 50% pumping supply reduction requirement would be based on a 50% reduction of NCS D's 5-year average demand from 2009-2013 (2,534 AFY), which would be calculated to be 1,267 AFY annually during Stage IV conditions.

4. WATER SHORTAGE CONTINGENCY PLANNING

This section provides an overview of the NMMA water shortage contingency planning requirements for the Santa Maria River Valley Groundwater Basin.

On April 14, 2014, the Nipomo Mesa Management Area (NMMA) Technical Group approved a set of water shortage response stages, including pumping reduction targets during advanced shortage conditions. Response stages are triggered based on the Technical Groups' previously developed shortage criterion for Potentially Severe Water Shortage Conditions and Severe Water Shortage Conditions. The reduction targets in the NMMA's plan are applicable to all purveyor members of the NMMA, including NCS D.

In May 2015, NMMA issued a statement that the Key Well Index (KWI) had declined to Severe Shortage Conditions. At a Special Meeting of its Board of Directors held on Thursday May 21, 2015 the Nipomo Community Services District declared Stage III Water Shortage conditions and directed District staff to implement the response plan. The Water Shortage Response and Management Plan is based on five escalating stages of drought. In Stages III through V, there are targeted reductions in water use designed to protect long-term groundwater supplies. Stage III represents Severe Water Shortage Conditions and sets a goal of reducing District-wide water use by 30%. In April 2016, NMMA calculated the Key Well Index (KWI), which is a network of wells within the Santa Maria River Valley Groundwater Basin to monitory groundwater conditions. A quality assurance/quality control process will be completed before July 2016. At that time NMMA will make a public announcement regarding their findings. NMMA purveyor member agencies will be compelled to adjust their conservation objectives to meet the Water Shortage Response and Management Plan. **Table 4-1** summaries the water shortage conditions and required supply reductions.

Table 4-1 Stages of Water Shortage Contingency Plan

Stage	Percent Supply Reduction	Water Supply Condition
I	0%	Always in place.
II	20%	Potentially Severe Water Shortage Condition declaration pursuant to NMMA Water Shortage Condition and Response Plan.
III	30%	Severe Water Shortage Condition declaration pursuant to NMMA Water Shortage Condition and Response Plan.
IV	50%	Severe Water Shortage Condition declaration pursuant to NMMA Water Shortage Condition and Response Plan, lasting more than 1 year from the initial declaration; or Severe Water Shortage declaration pursuant to NMMA declaration triggered by both the Key Well Index and the Coastal Area Criterion
V	60%	Severe Water Shortage Condition declaration pursuant to NMMA Water Shortage Condition and Response Plan, lasting more than 2 years from the initial declaration, based on both the Key Well Index and Coastal Area Criterion.
NOTES: Based on NMMA Water Shortage Response Stages Endorsed by NMMA Technical Group April 14, 2014		

5. WATER SUPPLY OVERVIEW

Imported Water

Historically, the District has relied on groundwater as the sole source of water. The groundwater is pumped from the Nipomo Mesa Management Area (NMMA) of the Santa Maria River Valley Groundwater Basin, an aquifer that has been adjudicated. In July 2015, the District completed the Nipomo Supplemental Water Project (NSWP) and began importing water from the City of Santa Maria. The NSWP will allow the District to reduce pumping from existing wells to slow the depletion of groundwater and reduce the potential for seawater intrusion on the Nipomo Mesa. The Project will also increase the reliability of the District water supply by providing an additional source other than groundwater. The Project is consistent with the settlement agreement and the judgment related to the groundwater adjudication of the Santa Maria Groundwater Basin. The calculated water supply from the NSWP for 2017-2019, provided by the City of Santa Maria, is estimated to be 800 AFY (534 AFY for NCS D and 266 for other purveyors) annually for 2017-2019.

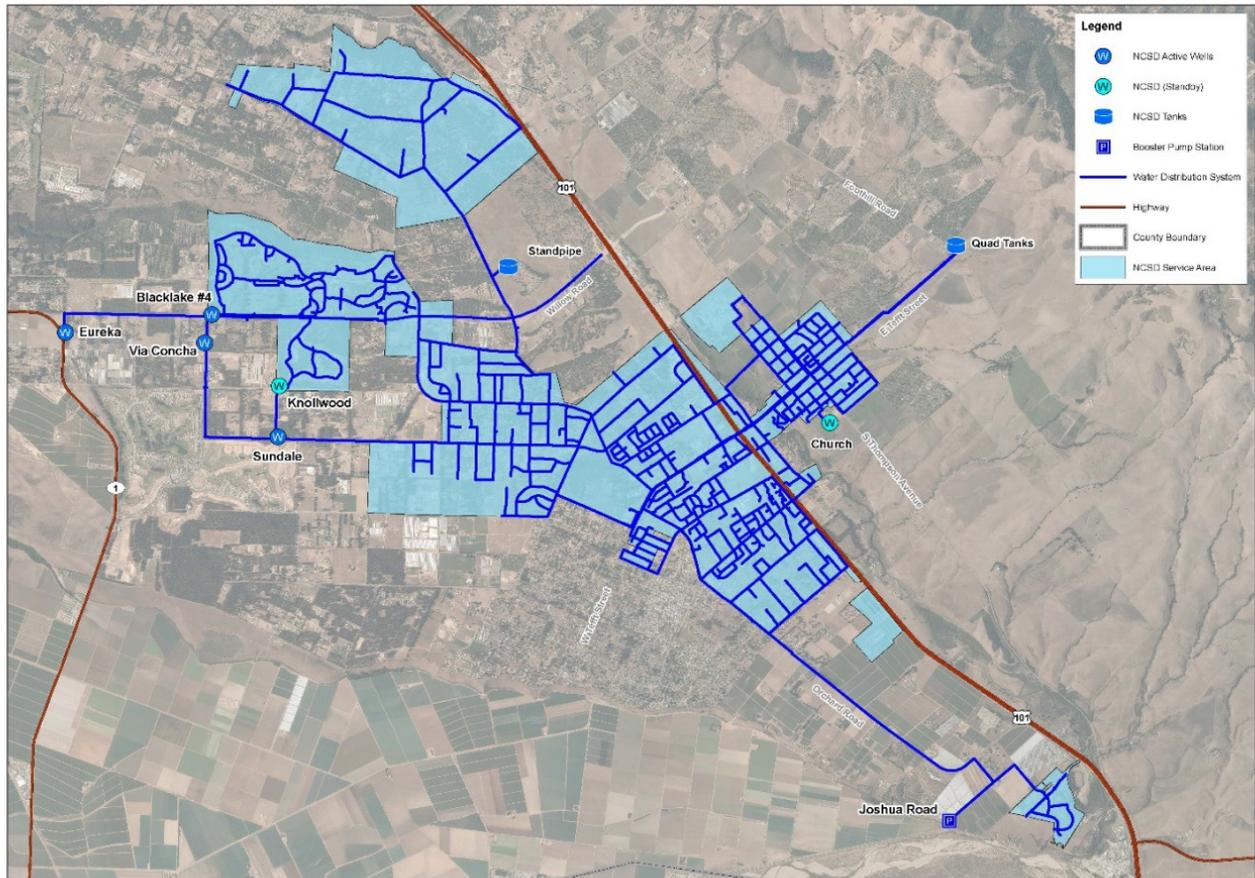
Groundwater

NCS D pumps the majority of its water supply from the Santa Maria River Valley Groundwater Basin and has five active wells in the basin and shown in Figure 5-1.

Underlying NCS D is a portion of Santa Maria River Valley Groundwater Basin (Basin 3-12 per DWR Bulletin 118). The Santa Maria River Valley Groundwater Basin covers about 288 square miles. It is bordered by the Santa Lucia mountain ranges to the north, the Casmalia-Solomon Hills to the south, the San Rafael Mountains to the east, and the Pacific Ocean to the west. The geologic makeup of the Santa Maria River Valley Groundwater Basin is composed of alluvial deposits including gravel, sand, silt, and clay. The estimated thickness ranges from 200 to 3,000 feet. This layer of alluvial deposits covers underlying consolidated rock which usually yields small quantities of water. Most of the water is contained in the alluvial sediments. Recharge of the Santa Maria River Valley Groundwater Basin occurs in four main ways: rainfall percolation,

river bed recharge, subsurface inflows, and return flows. Annual precipitation over the basin ranges from 13 to 17 inches, with an average of 15 inches.

Figure 5-1: Imported Water and Groundwater Well Locations



6. HISTORICAL SUPPLY DELIVERIES

NCSO pumps the majority of its water supply from the Santa Maria River Valley Groundwater Basin and has five active wells in the basin. **Table 6-1** summarizes historical groundwater pumping from the Santa Maria River Valley Groundwater Basin and imported water from the NSWP for 2007 through 2015.

Table 6-1: Historical Pumping and Imported Water			
Calendar Year	Alluvial Well Production (acre-feet)	NSWP Delivery (acre-feet)	Total Water Production (acre-feet)
2007	2,856	0	2,856
2008	2,755	0	2,755
2009	2,698	0	2,698
2010	2,367	0	2,367
2011	2,488	0	2,488
2012	2,473	0	2,473
2013	2,646	0	2,646
2014	2,310	0	2,310
2015	1,626	322	1,948

Table 6-2 summaries NCS D’s active wells including groundwater source, estimated flow rate, well depth and SWL as of June 10, 2016.

Table 6-2 NCS D Active Wells				
Well Name	Groundwater Source	Estimated Pump Rate (gpm)	Well Depth (feet)	Static Water Level (feet) as of June 10, 2016
Eureka	Santa Maria River Valley Groundwater Basin	700	585	211
Via Concha		650	710	317
Blacklake #4		350	530	366
Sundale		850	680	257
Knollwood		240	620	302

7. PROJECTED AVAILABLE WATER SUPPLY 2017-2019

Based on the requirements of the Water Supply Reliability assessment **Table 7-1** summarizes the anticipated demand and supply conditions from 2017 through 2019.

Table 7-1: Calculated Supplies for 2017-2019					
Calendar Year	Estimated Demand (AFY)	NSWP Imported Water (AFY)	Santa Maria River Valley Groundwater Basin (AFY)*	Total Water Production (AFY)	Calculated Conservation Standard
2017	2,369	534	1,267	1,801	24%
2018	2,369	534	1,267	1,801	24%
2019	2,369	534	1,267	1,801	24%

*Supply available based on water conservation requirements by NMMA during Stage IV water shortage conditions.

However, as stated in Section 3, assuming that NCS D will be in Stage IV Water Shortage Conditions per the NMMA requirements, projected demands for 2017-2019 would be limited to 1,801 AFY. **Table 7-2** provides an alternative view of projected demand and supply conditions assuming 50% reduction by the NMMA.

Table 7-2: Calculated Supplies for 2017-2019 with NMMA 50% Pumping Reduction					
Calendar Year	Estimated Demand (AFY)	NSWP Imported Water (AFY)	Santa Maria River Valley Groundwater Basin (AFY)	Total Water Production (AFY)	Conservation Standard
2017	1,801	534	1,267	1,801	0%
2018	1,801	534	1,267	1,801	0%
2019	1,801	534	1,267	1,801	0%