



**FINAL**

Northern Cities Management Area Technical Group

# **Northern Cities Management Area 2021 Annual Monitoring Report**

Prepared for

City of Arroyo Grande ■ City of Grover Beach ■ Oceano Community Services District ■  
City of Pismo Beach

April 13, 2022

Prepared by:

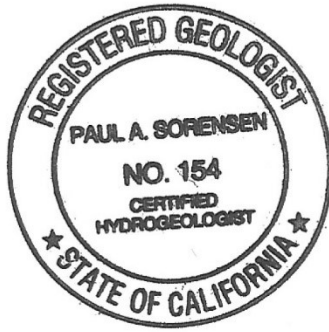
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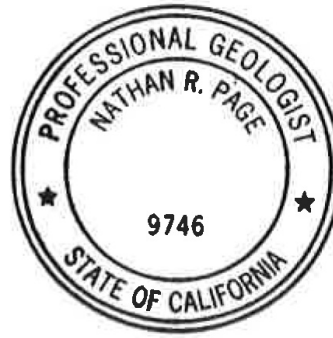
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# Northern Cities Management Area 2021 Annual Monitoring Report

This report was prepared by the staff of GSI Water Solutions, Inc., in collaboration with GEI Consultants, Inc., under the supervision of professionals whose signatures appear below. The findings or professional opinions were prepared in accordance with generally accepted professional engineering and geologic practice.



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## Appendix

Appendix A NCMA Sentry Well Water Level and Water Quality Data

## Abbreviations and Acronyms

2021 Annual Report	Northern Cities Management Area 2021 Annual Monitoring Report
AFY	acre-feet per year
Arroyo Grande	City of Arroyo Grande
ATF	advanced treatment facility
APW	advanced purified water
CIMIS	California Irrigation Management Information System
County	San Luis Obispo County
CSA	County Service Area
CUP	Consumptive Use Program
DDW	Division of Drinking Water
Delta	Sacramento-San Joaquin Delta
DRI	Desert Research Institute
DWR	California Department of Water Resources
ET	evapotranspiration
Grover Beach	City of Grover Beach
gpcd	gallons per capita daily
IDC	2015 Integrated Water Flow Model Demand Calculator
ILRP	Irrigated Lands Regulatory Program
IRWMP	Integrated Regional Water Management Plan
IWFM	2015 Integrated Water Flow Model
LRRP	Low Reservoir Response Plan
NAVD 88	North American Vertical Datum of 1988
NCMA Monitoring Program	Monitoring Program for the Northern Cities Management Area
NCMA	Northern Cities Management Area
Nipomo station	Nipomo Station (No. 202)
NMMA	Nipomo Mesa Management Area
NRCS	Natural Resources Conservation Service
Oceano CSD	Oceano Community Services District
OCSD	Oceano Community Services District
PE	Professional Engineer
PG&E	Pacific Gas & Electric
Pismo Beach	City of Pismo Beach

RWFPS	Recycled Water Facility Planning Study
SGMA	Sustainable Groundwater Management Act
SLOFCWCD	County of San Luis Obispo Flood Control and Water Conservation District
SMGB	Santa Maria River Valley Groundwater Basin
SMGBMA	Santa Maria Groundwater Basin Management Area
SMVMA	Santa Maria Valley Management Area
SSLOCSD	South San Luis Obispo County Sanitation District
SWP	California State Water Project
SWRCB	State Water Resources Control Board
TDS	total dissolved solids
TG	NCMA Technical Group
TAG	Technical Advisory Group
UWMP	Urban Water Management Plan
WRAC	Water Resources Advisory Committee
WSCP	Water Shortage Contingency Plan
WWTP	wastewater treatment plant

## Executive Summary

The 2021 Annual Monitoring Report for the Northern Cities Management Area (NCMA) (Annual Report) is prepared pursuant to the requirements of the 2005 Stipulation for the Santa Maria Groundwater Basin Adjudication (2005 Stipulation) and the January 25, 2008 Judgment After Trial (2008 Judgment). This 2021 Annual Report provides an assessment of hydrologic conditions for the NCMA based on data collected during the calendar year of record. As specified in the Judgment, the NCMA agencies, consisting of the City of Arroyo Grande, City of Grover Beach, City of Pismo Beach, and Oceano Community Services District (OCSD), regularly monitor groundwater in the NCMA and analyze other data pertinent to water supply and demand, including the following:

- Land and water use in the Santa Maria River Valley Groundwater Basin (SMGB or basin)
- Sources of supply to meet water demand
- Groundwater conditions (including water levels and water quality)
- Amount and disposition of NCMA water supplies that are not groundwater

Results of the data compilation and analysis for calendar year 2021 are documented and discussed in this 2021 Annual Report.

## Groundwater Conditions

During 2021, water elevations generally decreased slightly in the NCMA portion of the SMGB in response to below-average rainfall in 2021. The relatively minor decrease in water levels throughout most of the area, despite the below-average rainfall conditions, is less than would be expected given the recent rainfall patterns. That the impacts are not greater is attributed to ongoing efforts by all NCMA agencies to minimize groundwater extraction and maximize surface water supply sources while maintaining the water conservation practices and requirements brought on by the current drought.

## Groundwater Levels

The greatest threat to the groundwater supply in the area is seawater intrusion. An indicator of whether the NCMA agencies and other stakeholders are successfully averting the threat of seawater intrusion is the groundwater elevation in the NCMA sentry wells near the coastline. The average water elevations of three sentry wells—24B03, 30F03, and 30N02—make up a Deep Well Index. This index was developed by the NCMA in 2007 to gauge the ability of the aquifer to withhold potential landward migration of seawater. A Deep Well Index value above 7.5 feet North American Vertical Datum 1988 (NAVD 88)<sup>1</sup> generally indicates that sufficient freshwater flow occurs from the east to the coastline to prevent seawater intrusion. History has shown that a prolonged period in which the Deep Well Index level is below 7.5 feet develops groundwater conditions that pose a risk of seawater intrusion. The following are evaluations of groundwater levels through the seasons in calendar year 2021.

- **Spring 2021.** In the mostly urbanized areas north of Arroyo Grande Creek, groundwater is extracted from the deep groundwater aquifers of the Paso Robles Formation and the Careaga Sand. The water elevation contours in the deep aquifer system in spring of 2021 generally showed a westerly to southwesterly

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<sup>1</sup> Note that NAVD 88 is 2.72 feet lower than mean sea level, as recorded at the Port San Luis tide station datum (available at <https://tidesandcurrents.noaa.gov/datums.html?id=9412110>); however, for the purposes of this report it will be referred to as sea level.

groundwater flow (see **Figure 8**, on page 28). These groundwater flow gradients and positive (above mean sea level) groundwater elevations are developed and maintained primarily because the NCMA agencies have managed this portion of the basin through cooperative water management and conservation efforts. The proactive management of the basin and collaborative efforts by the agencies was necessary to respond to lower water levels in the Deep Well Index more than a decade ago. The combined NCMA efforts are to ensure that fresh groundwater flow to the ocean continues to create a barrier to seawater intrusion. April 2021 groundwater elevations in the deep aquifer system main production zone along the coast ranged from 7.0 to 9.0 feet above sea level. In the southernmost portion of the area, the groundwater elevations, flow, and gradient are less well known because there are only a limited number of wells and point sources of water level data. The groundwater gradient and flow in this area are generally inferred on the basis of historical records and trends as well as water level data from the Nipomo Mesa Management Area (NMMA) farther east.

- The Cienega Valley is in the central area of the NCMA, generally south of Arroyo Grande Creek. All known groundwater pumping in this area is from the relatively shallow (less than 100 feet deep) alluvial aquifer. Agricultural groundwater production typically results in seasonal drawdown of the alluvial aquifer in the valley. Groundwater elevations in the alluvial aquifer in the Cienega Valley were in the range of below 0 feet to more than 30 feet above sea level in spring 2021. These data show a general decrease in alluvial groundwater elevations from April 2020 to April 2021. Spring 2021 alluvial groundwater elevations showed a subdued pumping trough in the Cienega Valley, with groundwater elevations generally below sea level in the center of the depression.
- **Fall 2021.** Groundwater level contours for October 2021 are presented in **Figure 9**, on page 29. Groundwater elevations in the alluvial aquifer within the Cienega Valley in October 2021 were 1 to 14 feet lower than elevations at the start of the irrigation season in April 2021, which is a typical seasonal response to the irrigation season. These conditions are consistent with the pumping depressions observed historically during the fall in the Cienega Valley. The alluvial groundwater elevation in the pumping depression in October 2021, at 11.6 feet below sea level, was 2.8 feet higher than in October 2020. October 2021 groundwater elevations in the deep aquifer system main production zone along the coast ranged from 3.8 to 7.0 feet above sea level.
- **Deep Wells.** In 2021, the Deep Well Index started the year above the 7.5-foot threshold value with an index number in January of more than 9 feet. It continued to rise, reached a high of nearly 10 feet during February, and then began to decline. The index value dropped below the 7.5-foot trigger value by July and continued to fall to a low point of just over 6 feet in late October. A slow recovery occurred through November, followed by a more rapid recovery in December, coincident with above average monthly rainfall received in December. The index value continued to rise throughout the end of the year and finished 2021 at about 9 feet above sea level.
- **NCMA/NMMA Boundary.** The water elevation in the San Luis Obispo County monitoring well (Well 32C03), which was installed to monitor aquifer conditions along the NCMA/NMMA boundary, typically exhibits regular seasonal fluctuations. As in 2020, the water elevation in the well remained above sea level throughout all of 2021, in contrast to the 2013 through 2016 period when the water levels in the NCMA/NMMA boundary area typically dropped below sea level in August and remained at a low elevation until early October.

## Change in Groundwater in Storage

The change in groundwater in storage in the NCMA portion of the SMGB between April 2020 and April 2021 is estimated by comparing water level contour maps created for these periods and calculating the volume change from April 2020 to April 2021. Separate estimates of change in groundwater in storage were computed for both the deep aquifer system and for the alluvial aquifer and then summed to represent the total NCMA



estimated change in groundwater in storage. Comparison of April water levels was chosen to comply with the California Department of Water Resources (DWR) reporting requirements under the Sustainable Groundwater Management Act (SGMA).<sup>2</sup>

A decrease of groundwater in storage is a reflection of a net decrease in water levels across the aquifer. During the period of April 2020 to April 2021, the NCMA portion of the SMGB experienced a net decrease of groundwater in storage. The net decrease in groundwater levels represented a decrease of groundwater in storage from April 2020 to April 2021 of approximately 1,400 acre-feet (AF); that is, there was approximately 1,400 AF less groundwater stored in the NCMA portion of the SMGB in April 2021 than in April 2020.

## Groundwater Quality

Analytical results of key water quality data (chloride, total dissolved solids [TDS], and sodium) in 2021 were generally consistent with historical concentrations and observed ranges of constituent concentrations. In general, no water quality results were observed that are a cause of concern.

None of the water quality results from monitoring events throughout 2021 indicate an incipient episode or immediate threat of seawater intrusion. Water quality degradation through incipient seawater intrusion occurred in 2009 with measured elevated concentrations of TDS, sodium, and chloride in wells 30N02, 30N03, and MW-Blue, all of which are screened in the Paso Robles Formation. No indications of seawater intrusion have been observed in wells screened in the underlying Careaga Sand. Once TDS, sodium, and chloride concentrations declined in the sentry well groundwater following the 2009–2010 season, the location of the seawater-freshwater interface was unknown, although the interface apparently is and has remained at some distance offshore since the 2009–2010 season.

## Water Supply and Production/Deliveries

- Total water use in the NCMA in 2021 (including urban use by the NCMA agencies plus agricultural irrigation and private pumping by rural water users) was 8,658 AF. Of this amount, Lopez Lake deliveries were 3,522 AF, California State Water Project deliveries totaled 1,772 AF, and groundwater pumping from the NCMA portion of the SMGB accounted for approximately 3,344 AF. The City of Arroyo Grande produced 20 AF from its Pismo Formation wells, outside the SMGB, in 2021. The breakdown is shown in **Table ES- 1** (following page).
- Urban water use in 2021 among the NCMA agencies was 6,073 AF, a slight increase from 2020. Urban water use in the past 20 years has ranged from 5,476 AF (2016) to 8,982 AF (2007). There has been an overall decline in urban production since 2007, although there have been slight increases since the low point in 2016. The decline in pumpage since 2013 was in direct response to a statewide order by the governor to reduce the amount of water used in urban areas by 20 percent. That goal was achieved locally by conservation activities implemented by the NCMA agencies, and the relatively low urban water has been maintained since then.

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<sup>2</sup> On September 16, 2014, Governor Jerry Brown signed into law a three-bill legislative package, composed of Assembly Bill 1739 (Dickinson), Senate Bill (SB) 1168 (Pavley), and SB 1319 (Pavley), collectively known as the Sustainable Groundwater Management Act (SGMA).

- Agricultural acreage in the NCMA portion of the SMGB has remained relatively constant for more than 20 years. Thus, the annual applied water requirement for agricultural irrigation has been relatively stable, although it varies with weather conditions. Acknowledging the variability resulting from weather conditions, agricultural applied water is not expected to change significantly given the relative stability of applied irrigation acreage and cropping patterns in the NCMA. Changes in rural domestic pumping have not been significant.

**Table ES- 1. Water Production by Source (AF), 2021**

Agency	Lopez Lake	State Water Project	SMGB Groundwater	Other Supplies <sup>1</sup>	Total
<b>Urban Area</b>					
Arroyo Grande	2,158	0	129	20	2,307
Grover Beach	795	0	482	0	1,277
Pismo Beach	406	1,302	63	0	1,771
Oceano CSD	163	470	85	0	718
<b>Urban Water Use Total</b>	<b>3,522</b>	<b>1,772</b>	<b>759</b>	<b>20</b>	<b>6,073</b>
<b>Non-Urban Area</b>					
Agricultural Irrigation Applied Water	0	0	2,457	0	2,457
Rural Water Users	0	0	82	0	82
Non-potable Irrigation by Arroyo Grande	0	0	46	0	46
<b>Total</b>	<b>3,522</b>	<b>1,772</b>	<b>3,344</b>	<b>20</b>	<b>8,658</b>

**Notes**

<sup>1</sup> Other Supplies includes groundwater pumped from outside the NCMA boundaries.

AF = acre-feet    CSD = Community Services District    SMGB = Santa Maria Groundwater Basin

## Threats to Water Supply

- Total groundwater pumping (urban, agriculture, and rural domestic) from the SMGB in the NCMA was 3,344 AF in 2021, which is 35 percent of the court-accepted<sup>3</sup> 9,500 acre-feet per year (AFY) long-term safe yield of the NCMA portion of the SMGB.
- When pumping is less than the safe yield of an aquifer, groundwater in storage should generally increase and result in rising groundwater levels. As such, groundwater elevations throughout the NCMA portion of the SMGB should rise significantly if several consecutive years of groundwater pumping occurs at 30 to 40 percent of the safe yield, which has been the case in the NCMA for the past decade. However, as illustrated by the decline in groundwater levels during 2021, the data show that the aquifer is still in a

<sup>3</sup> The calculated, consensus safe yield value of 9,500 AFY for the NCMA portion of the SMGB was included in the 2002 Settlement Agreement through affirmation of the 2001 Groundwater Management Agreement among the NCMA agencies, which is described in more detail in Section 1.1 of this report.

tenuous position with respect to the threat of seawater intrusion. The fragile health of the aquifer is illustrated by water elevations at just a few feet above sea level, coupled with the formation of a pumping depression in the alluvial aquifer within the Cienega Valley just west of the NCMA/NMMA boundary. According to the DWR Bulletin 63-3 report, both the Paso Robles Formation aquifer and the lower confined portion of the Cienega Valley alluvial aquifer are recharged primarily from subsurface groundwater inflow from the east, where the overlying confining layers are thin to non-existent (DWR, 1970). These recharge areas to the east include inland reaches of Arroyo Grande Valley and portions of Nipomo Mesa (DWR, 1970). The data indicate that the aquifer has little ability to withstand future droughts. Any increase in regional pumping, or any other changes that reduce recharge from the east will leave the NCMA with a serious groundwater deficit that threatens seawater intrusion.

- Historically, groundwater flowed from higher elevations inland westward towards the ocean, thereby acting to prevent seawater intrusion. In recent years, the well-documented pumping depression<sup>4</sup> in the deep aquifer system near Black Lake Canyon within the NMMA appears to have reversed the groundwater gradient. The apparent development of a landward gradient in the southern portion of the NCMA, because of the pumping depression in the NMMA, likely reduces the historical recharge volume of subsurface inflow into the NCMA from Nipomo Mesa. This reduction of subsurface inflow to the NCMA creates conditions more likely to result in seawater intrusion in the NCMA and NMMA.
- During 2021, there were no indications of seawater intrusion but any increase of groundwater pumping or decrease in rainfall may quickly result in a greater risk of seawater intrusion.

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<sup>4</sup> As documented in NMMA annual reports, available at <https://ncsd.ca.gov/resources/reports-by-subject>. (Accessed March 9, 2021.)

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## SECTION 1: Introduction

This Northern Cities Management Area 2021 Annual Monitoring Report (2021 Annual Report or Annual Report) summarizes hydrologic conditions for calendar year 2021 in the Northern Cities Management Area (NCMA) of the Santa Maria River Valley Groundwater Basin (SMGB or the basin) in San Luis Obispo County (County), California (**Figure 1**, on page 8). This report was prepared on behalf of four public agencies collectively referred to as the Northern Cities, which include the City of Arroyo Grande (Arroyo Grande), City of Grover Beach (Grover Beach), City of Pismo Beach (Pismo Beach), and the Oceano Community Services District (OCS; Oceano CSD)<sup>5,6</sup> (**Figure 2**, on page 9). These agencies, along with local landowners, the County, and the County of San Luis Obispo Flood Control and Water Conservation District (SLOFCWCD) have managed local surface water and groundwater resources since the late 1970s to preserve the long-term integrity of water supplies.

### 1.1 History of Litigation

The rights to pump groundwater from the SMGB have been in litigation (adjudication) since the late 1990s. The physical solution set forth in the 2005 Stipulation for the Santa Maria Groundwater Basin Adjudication (2005 Stipulation) and the January 25, 2008, Judgment After Trial (2008 Judgment)<sup>7</sup> established requirements and goals for the management of the entire SMGB. The Superior Court of California, County of Santa Clara (Court) established three separate management areas, including the NCMA, the Nipomo Mesa Management Area (NMMA), and the Santa Maria Valley Management Area (SMVMA). The Court mandated that each management area form a technical group to monitor the groundwater conditions of its area, to continuously assess the hydrologic conditions of each area, and to prepare an annual report each year to provide the Court with a summary of the previous year's conditions, actions, and threats.

The requirements for the annual report, as directed by the Court in the 2005 Stipulation (June 30, 2005, version, paragraph IV.D.3), are as follows:

*Within one hundred and twenty days after each Year end, the Management Area Engineers will file an Annual Report with the Court. The Annual Report will summarize the results of the Monitoring Program, changes in groundwater supplies, and any threats to Groundwater supplies. The Annual Report shall also include a tabulation of Management Area water use, including Imported Water availability and use, Return Flow entitlement and use, other Developed Water availability and use, and Groundwater use. Any Stipulating Party may object to the Monitoring Program, the reported results, or the Annual Report by motion.*

This 2021 Annual Report satisfies the requirements of the Court. The annual report for each calendar year (January 1 to December 31) is submitted to the Court by April 30 of the following calendar year, pursuant to the 2005 Stipulation. As a result of legislation passed by the State of California related to the Sustainable Groundwater Management Act (SGMA) that requires submittal of annual reports and supporting information and data for each adjudicated groundwater basin by April 1 of each year, the 2021 Annual Report is also published to the California Department of Water Resources (DWR) adjudicated basin reporting website.<sup>8</sup>

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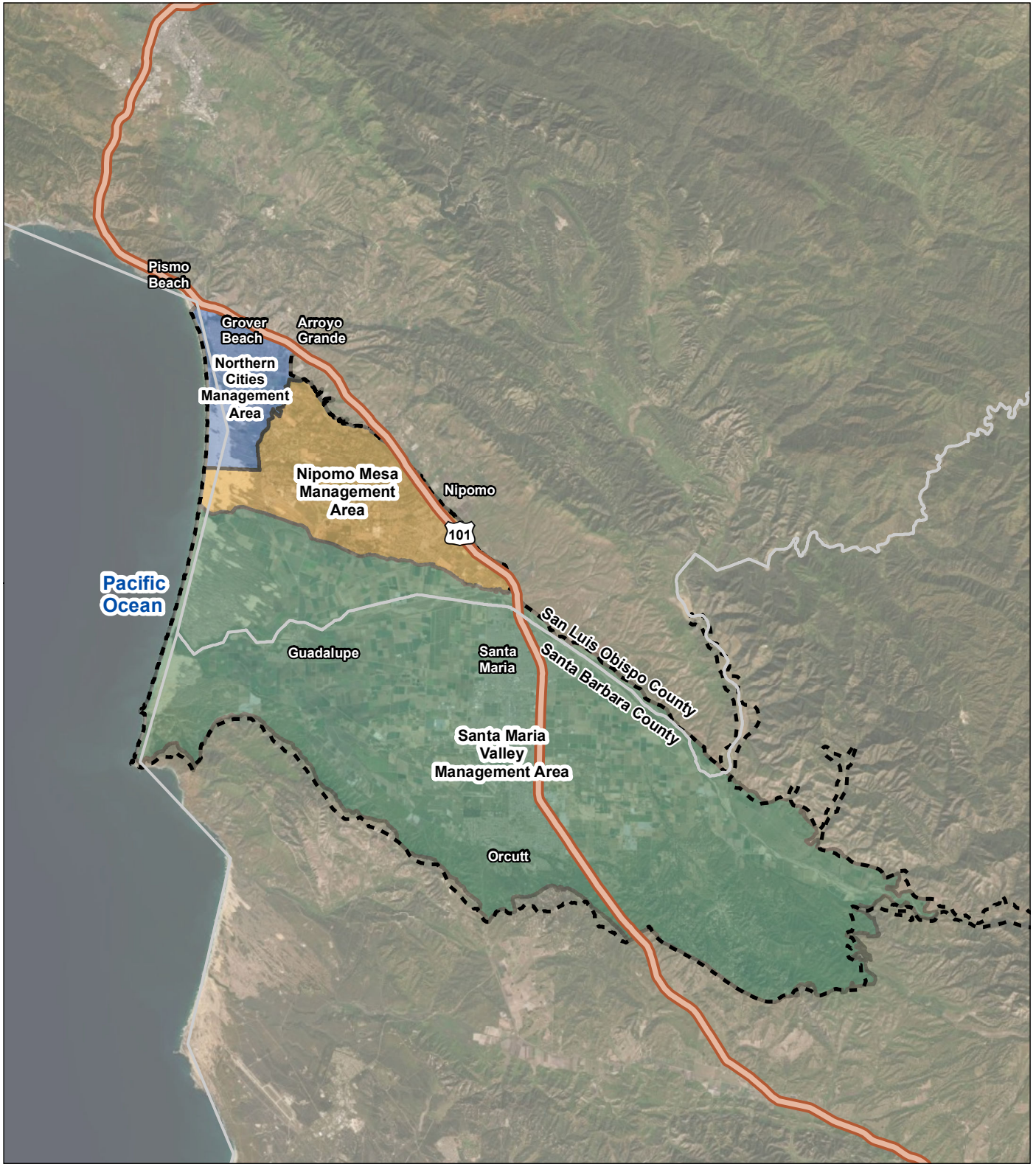
<sup>5</sup> Each agency may also be individually referred to as an NCMA agency.

<sup>6</sup> Portions of Arroyo Grande and Pismo Beach extend outside the NCMA.

<sup>7</sup> Santa Maria Valley Water Conservation District v. City of Santa Maria, et al., Case #1-97-CV-770214 Filing #G-79046. (Cal., 2015).

<sup>8</sup> The link to the reporting system is available on this DWR page: <https://water.ca.gov/Programs/Groundwater-Management/SGMA-Groundwater-Management/Adjudicated-Areas>.



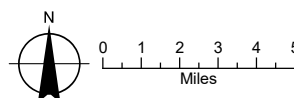


**FIGURE 1**

**Santa Maria Groundwater Basin**  
 Northern Cities Management Area  
 San Luis Obispo County, California

**LEGEND**

- Northern Cities Management Area
- Nipomo Mesa Management Area
- Santa Maria Valley Management Area
- Santa Maria Groundwater Basin (DWR 2019)
- County Borders

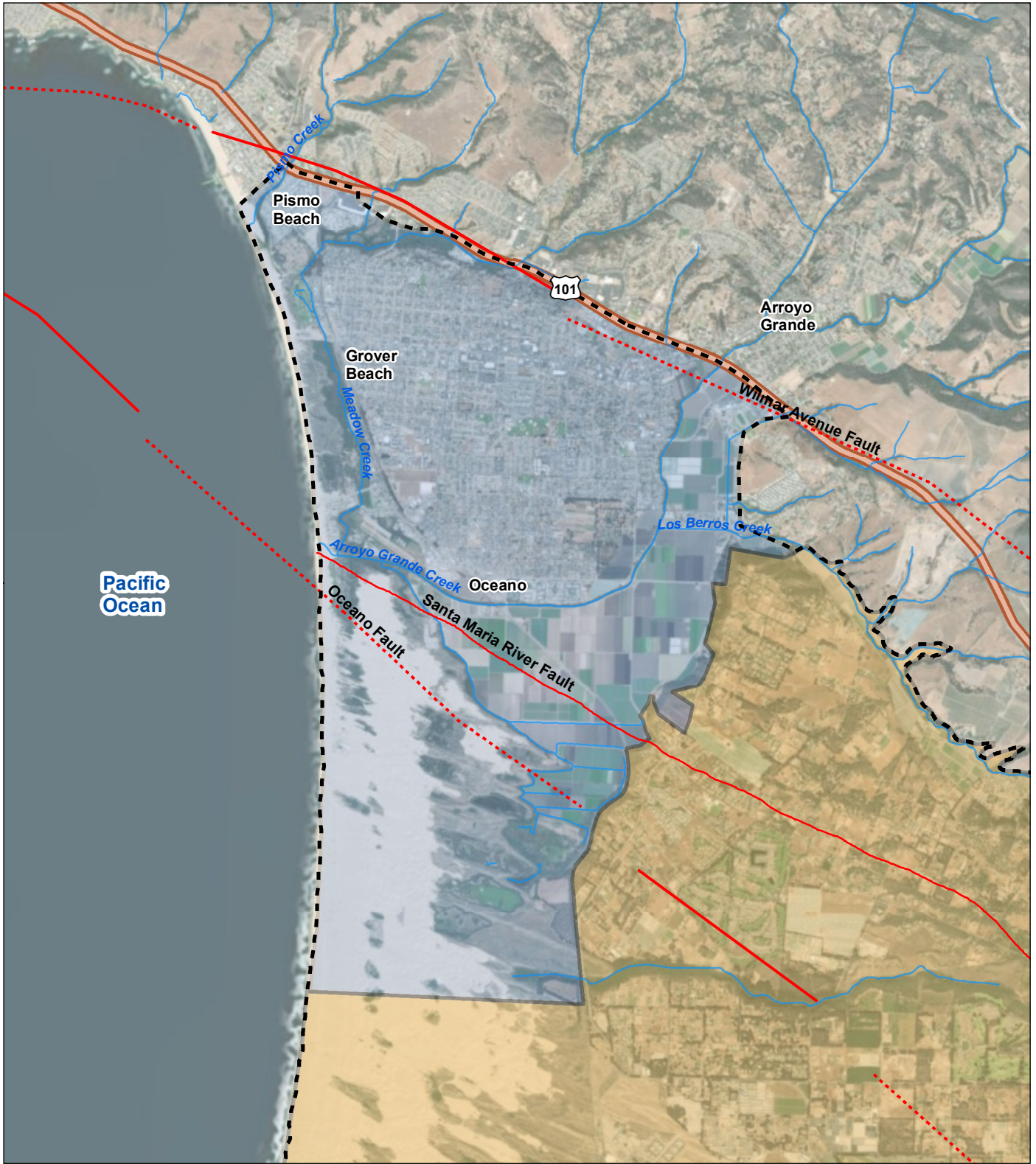


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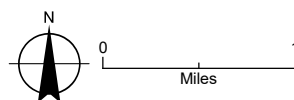


**LEGEND**

- Northern Cities Management Area
- Nipomo Mesa Management Area
- Santa Maria Groundwater Basin (DWR 2019)
- Faults
- Streams

**FIGURE 2**

**Northern Cities Management Area**  
San Luis Obispo County, California



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The collaborative water supply management approach of the NCMA agencies was recognized by the Court in the 2001 Groundwater Management Agreement (which was based on the 1983 Gentlemen’s Agreement), formalized in the Settlement Agreement Between Northern Cities, Northern Cities Landowners, and Other Parties (2002 Settlement Agreement or Settlement Agreement) and incorporated in the 2005 Stipulation. On June 30, 2005, the 2005 Stipulation, which included the 2002 Settlement Agreement, was agreed upon by numerous parties, including the NCMA agencies. The approach then was adopted by the Court in its 2008 Judgment. Although appeals to that decision were filed, a subsequent decision by the Sixth Appellate District (filed November 21, 2012) upheld the Judgment. On February 13, 2013, the Supreme Court of California denied a petition to review the decision.

Pursuant to the Court’s continuing jurisdiction, Arroyo Grande, Pismo Beach, and Grover Beach filed a motion on September 29, 2015, requesting that the Court impose moratoriums on certain water extraction and use by stipulating parties within the NMMA. Judge Kirwan denied the motion without prejudice. He did, however, order the parties to meet and confer to address the issues raised in the motion. The meet and confer process continued throughout 2021 through continuation of the case management conference process and a motion to appoint a technical advisor to the Court, which resulted in Court selection of a technical advisor. The order by the Court precipitated a series of meetings and collaborative actions between the NCMA and NMMA agencies, including the tentative formation of a Seawater Intrusion Working Group (now inactive) to discuss the threat and potential solutions for possible seawater intrusion.

## 1.2 Description of the NCMA Technical Group

Pursuant to a requirement in the 2005 Stipulation, the NCMA Technical Group (TG) was formed (Paragraph IV.C and Paragraph VII). The TG is composed of representatives of each of the NCMA agencies, as listed in **Table 1**.

**Table 1. NCMA TG Representatives**

Agency	Representative
City of Arroyo Grande	Bill Robeson Public Works Director
	Shane Taylor Utilities Manager
City of Grover Beach	Gregory A. Ray, PE Director of Public Works/City Engineer
	R.J. (Jim) Garing, PE Consulting City Engineer for Water and Sewer
City of Pismo Beach	Benjamin A. Fine, PE Director of Public Works/City Engineer
Oceano CSD	Will Clemens General Manager
	Tony Marracino Utility Systems Supervisor

**Notes**

CSD = Community Services District    PE = Professional Engineer



The NCMA TG contracts with Water Systems Consulting, Inc. (WSC), to serve as staff extension to assist the TG in its roles and responsibilities in managing the water supply resources. The TG also contracts with GSI Water Solutions, Inc., and its subconsulting partner, GEI Consultants, Inc., to conduct the quarterly groundwater monitoring and sampling tasks, evaluate water demand and available supply, identify threats to water supply, and assist the TG in preparation of the annual report.

### 1.3 NCMA TG Mission Statement

The NCMA TG developed the following mission statement to help guide ongoing initiatives and to capture the requirements outlined in the 2002 Groundwater Management Agreement, 2002 Settlement Agreement, 2005 Stipulation, and 2008 Judgment:

**Preserve and enhance the *sustainability* of water supplies for the Northern Cities Area by:**

- **Enhancing supply *reliability***
- **Protecting water *quality***
- **Maintaining *cost-effective* water supplies**
- **Advancing the *legacy* of cooperative water resources management**
- **Promoting *conjunctive use***

### 1.4 Coordination with Management Areas

Since 1983, management of the NCMA has been based on cooperative efforts of the four NCMA agencies in continuing collaboration with the County, SLOFCWCD, and other local and state agencies. Specifically, the NCMA agencies have jointly monitored and managed their groundwater production and, in cooperation with the SLOFCWCD, invested in surface water supplies to reduce dependence on groundwater pumping and protect the groundwater resource. In addition to the efforts discussed in this 2021 Annual Report, cooperative management occurs through many means, including communication by the NCMA agencies in their respective public meetings, participation in the SLOFCWCD Zone 3<sup>9</sup> Advisory Committee (related to the management and operation of Lopez Lake, which is described further in Section 4.1.1), and participation in the Water Resources Advisory Council (WRAC, the County-wide advisory panel on water issues). The NCMA agencies are active participants in current and ongoing integrated regional water management efforts and participated in preparation and adoption of the 2014 update of the San Luis Obispo County Integrated Regional Water Management Plan (IRWMP). The IRWMP promotes integrated regional water management to ensure sustainable water uses, reliable water supplies, better water quality, environmental stewardship, efficient urban development, protection of agriculture, and a strong economy.

Since the 2008 Judgment, the NCMA TG has taken the lead in cooperative management of its management area. The NCMA TG has met monthly (at a minimum) for many years and continued to do so throughout 2021. Based on the threat of COVID-19,<sup>10</sup> as reflected in the Proclamations of Emergency issued by the Governor of the State of California, all TG meetings after March 17, 2020, were conducted as a phone-in/web-based format. The TG also participates in the Santa Maria Groundwater Basin Management Area (SMGBMA) technical subcommittee, formed in 2009; however, no meetings of the SMGBMA were held in 2021. The purpose of the SMGBMA technical subcommittee is to coordinate efforts among the three management areas (NCMA, NMMA, SMVMA) such as sharing data throughout the year and during preparation of the annual report,

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<sup>9</sup> Flood Control Zone 3 (Lopez Project) is operated by SLOFCWCD to operate Lopez Reservoir for municipal and agricultural water supplies. It was established to operate the Lopez water supply system and is a wholesale supplier. The contractors in Zone 3 include the communities of Oceano, Grover Beach, Pismo Beach, Arroyo Grande, and County Service Area 12 (including the Avila Beach area).

<sup>10</sup> The abbreviation for coronavirus disease 2019.

reviewing and commenting on technical work efforts of other management areas, standardizing monitoring protocols, considering projects and grant opportunities of joint interest and benefit, and sharing information and data among the managers of the three management areas.

The outcomes of the motion that Arroyo Grande, Pismo Beach, and Grover Beach filed on September 29, 2015 (see Section 1.1), include increased discussion and collaboration between the NCMA and NMMA. One of the initiatives was the formation of an NCMA-NMMA Management Coordination Committee that has met several times since 2018 to discuss items of mutual concern and develop strategies for addressing the concerns. Another area of increased mutual collaboration between the NCMA and NMMA was the formation in 2016 of a technical team to collaboratively develop a single data set of water level data points as part of preparing a consistent set of semiannual water level contour maps for the NCMA and NMMA. Those efforts continued into and throughout 2021 and resulted in the development of consistent water level contouring (and enhanced understanding of groundwater conditions) throughout the NCMA and NMMA.

## 1.5 Development of Monitoring Program

The 2008 Judgment orders the stipulating parties to comply with all terms of the 2005 Stipulation. As specified in the Judgment and as outlined in the *Monitoring Program for the Northern Cities Management Area* (Todd Groundwater, Inc. [Todd], 2008) (NCMA Monitoring Program), the NCMA agencies are to conduct groundwater monitoring of wells in the NCMA. In accordance with requirements of the Judgment, the NCMA agencies collect and analyze data pertinent to water supply and demand, including the following:

- Land and water use in the NCMA portion of the SMGB
- Sources of supply to meet those uses
- Groundwater conditions (including water levels and water quality)
- Amount and disposition of other sources of water supply in the NCMA

The NCMA Monitoring Program requires that the NCMA agencies gather and compile pertinent information on a calendar-year basis; this is accomplished through data collected by NCMA agencies (including necessary field work), the SLOFCWCD, and by other public agencies. Periodic reports, such as Urban Water Management Plans (UWMPs) prepared by Arroyo Grande, Grover Beach, and Pismo Beach, provide information about demand, supply, and water supply facilities. Annual data are added to the comprehensive NCMA database and analyzed. Results of the data compilation and analysis for 2021 are documented and discussed in this 2021 Annual Report.

As shown in **Figure 1**, on page 8, the NCMA represents the northernmost portion of the SMGB as defined in the 2005 Stipulation. Adjoining the NCMA to the south and east is the NMMA; the SMVMA encompasses the remainder of the SMGB. **Figure 2**, on page 9, shows the locations of the four NCMA agencies in the NCMA.

## 1.6 Groundwater Monitoring Network

The NCMA Monitoring Program includes (1) compilation of groundwater elevation data from the County, (2) water quality and groundwater elevation monitoring data from the network of sentry and monitoring wells in the NCMA, and (3) groundwater elevation data from municipal pumping wells. Analysis of these data is summarized below in accordance with the NCMA Monitoring Program (Todd, 2008) and as modified as additional well data and data sources have become available over the years.

Approximately 150 wells within the NCMA were monitored for water levels by the County at some time during the past few decades. The County currently monitors the water level in 50 wells within the NCMA on a semiannual basis in April and October. The County monitoring program includes four sentry well clusters

(piezometers) along the coast, a four-well cluster in Oceano, and County Monitoring Well No. 3 (12N/35W-32C03) (County Monitoring Well No. 3 [32C03]) located on the eastern NCMA boundary between the NCMA and NMMA (**Figure 3**, on page 14). The County monitors more than 125 additional wells in the NMMA portion of the SMGB within the County. Beginning in 2009, the NCMA agencies initiated a quarterly sentry well monitoring program to supplement the County's semiannual schedule.

To monitor overall changes in groundwater conditions, representative wells within the NCMA were selected for preparation of hydrographs and evaluation of water level changes. Wells were selected based on the following criteria:

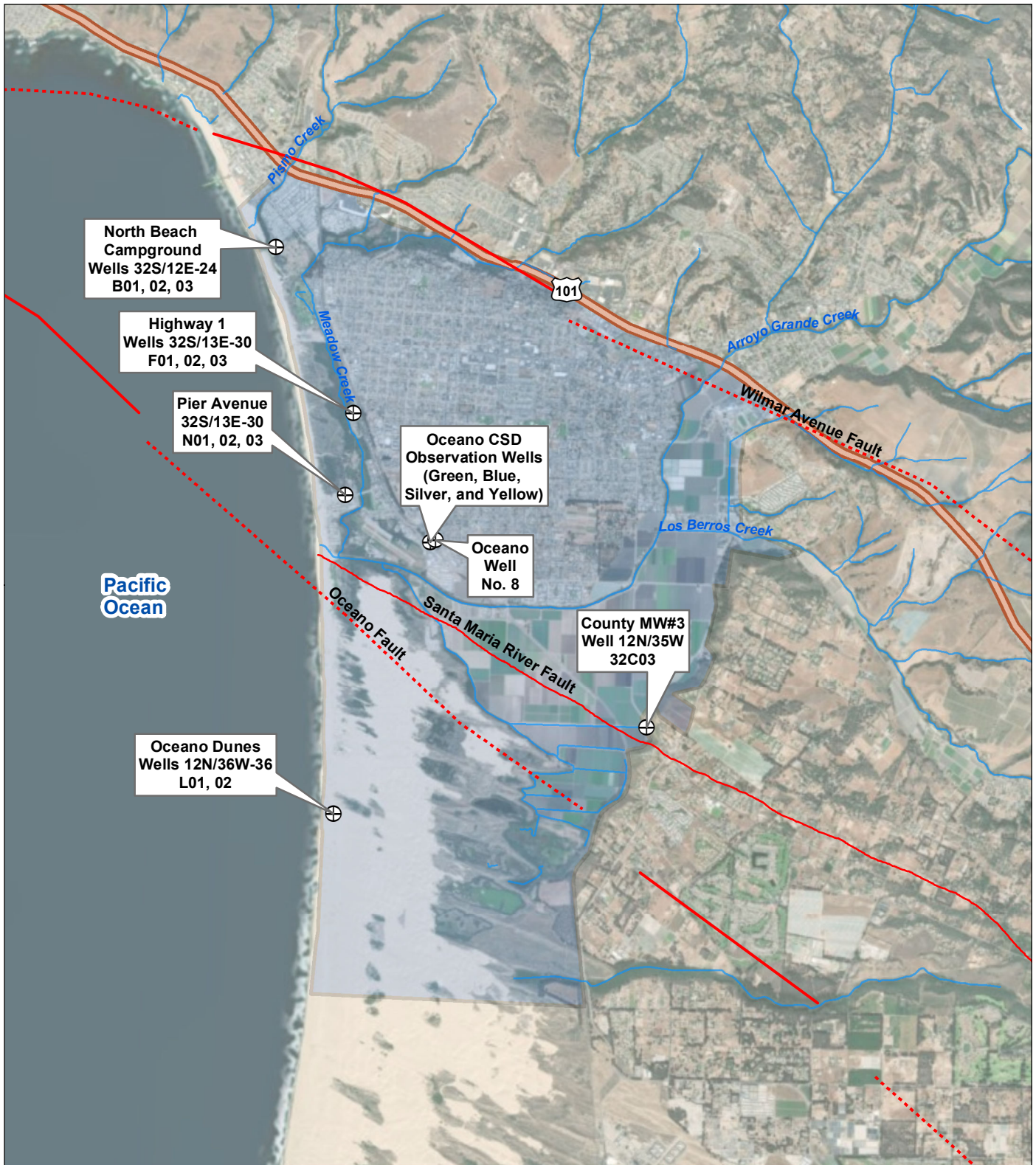
- The wells must be part of the County's current monitoring program or part of a public agency's regular monitoring program.
- Detailed location information must be available.
- Construction details of the wells must be available.
- The locations of the wells should have a wide geographic distribution.
- The historical record of water level data must be long and relatively complete.

Many of the wells that have been used in the program are production wells that were not designed for monitoring purposes (i.e., the wells are screened across various production zones). Moreover, many of the wells are active production wells or are located near active wells and are therefore potentially subject to localized pumping effects that result in measurements that are lower than the regionally representative water level. These effects are not always apparent at the time of measurement and data cannot easily be identified as representing static groundwater levels in specific zones (e.g., unconfined or deep confined to semi-confined). Therefore, data should be considered as a whole in developing a general representation of groundwater conditions.

The "sentry" wells (32S/12E-24Bxx, 32S/13E-30Fxx, 32S/13E-30Nxx, and 12N/36W-36Lxx) are a critical element of the groundwater monitoring network and are designed to provide an early warning system to identify potential seawater intrusion in the aquifer (**Figure 3**, on page 14). Each sentry well consists of a cluster of multiple wells that allows for the measurement of groundwater elevation and quality from discrete depths. Also shown in **Figure 3**, on page 14, is the OCSD observation well cluster, a dedicated monitoring well cluster located just seaward of OCSD production well 8, and County Monitoring Well No. 3 (32C03). **Figure 4**, on page 15, shows the depth and well names of the sentry well clusters, the OCSD observation well cluster, and County Monitoring Well No. 3 (32C03).

Traditionally, the wells were divided into three basic depth categories including shallow, intermediate, and deep to describe the relative depths of each monitoring well within the cluster. The basic depth categories do not necessarily describe the geologic unit and relative depth of the unit that the screened portion of the well monitors. It is important, however, to recognize and identify the geologic unit that each well monitors. The water level responses and water quality changes are quite different in wells that monitor the shallow alluvial unit (24B01, 30F01, and 30N01), the Paso Robles Formation (24B02, 30F02, 30N02, 30N03, 36L01, OCSD MW-Green, OCSD MW-Blue, and 32C03), and the deeper Careaga Sand (24B03, 30F03, 36L02, OCSD MW-Silver, and OCSD MW-Yellow). The significance of this level of differentiation will be studied more extensively in the future.



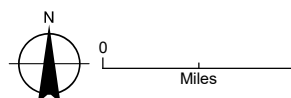


**LEGEND**

- ⊕ NCMA Monitoring Wells
- ▭ Northern Cities Management Area
- Faults
- Streams

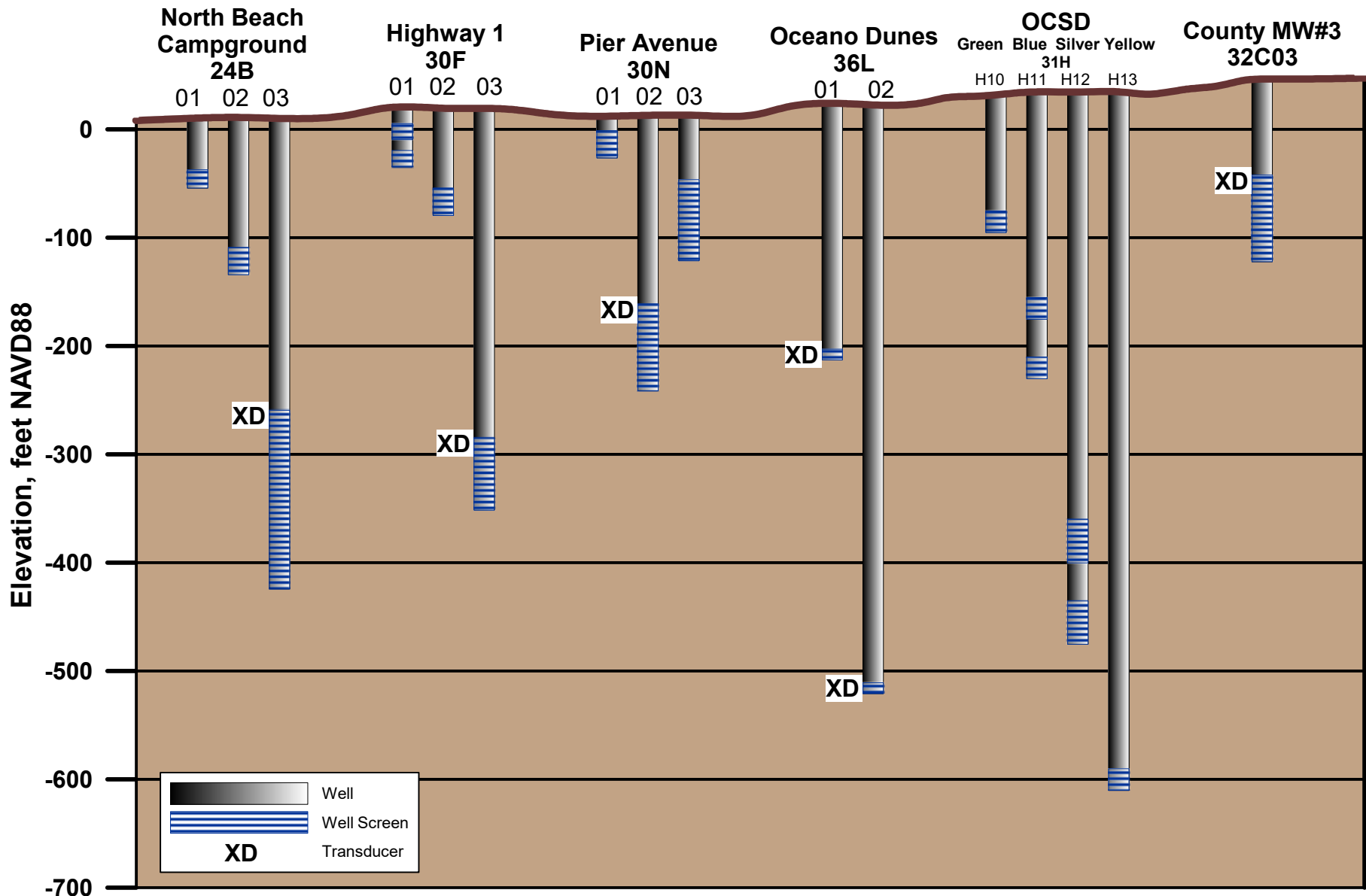
**FIGURE 3**

**Locations of Monitoring Wells**  
 Northern Cities Management Area  
 San Luis Obispo County, California



Date: February 26, 2020  
 Data Sources:

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Notes:  
 NAVD88 - North American Vertical Datum of 1988  
 OCSD - Oceano Community Services District

**FIGURE 4. DEPTHS OF MONITORING WELLS**  
 Northern Cities Management Area  
 San Luis Obispo County, California

Since the sentry well monitoring program began in 2009, 52 monitoring events have been conducted. These monitoring events include collection of synoptic groundwater elevation data and water quality samples for laboratory analysis.

## 1.7 Recent and Ongoing Strategic Initiatives

### 1.7.1 Strategic Plan

An NCMA Strategic Plan (Strategic Plan) was first developed in 2014 to provide the NCMA TG with a mission statement to guide future initiatives, provide a framework for identifying and communicating water resource planning goals and objectives, and formalize a 10-year work plan for implementation of those efforts. Several key objectives were identified related to enhancing water supply reliability, improving water resource management, and increasing effective public outreach. Implementation of these efforts continued throughout 2021.

Work began in 2019 to update the 2014 Strategic Plan, which was developed over a series of strategic planning sessions and NCMA TG meetings and culminated with the publication of the Strategic Plan for the NCMA TG in March 2020.

Several key strategies were identified by the TG for improving the sustainability of the water resource. Strategic initiatives were then developed for each key strategy. The TG then developed an implementation plan for the key strategies that includes current, short-term, and long-term time frames for initiatives that could be completed within 1 year, 5 years, and more than 5 years.

A more detailed description of the Strategic Plan is provided in Section 7.1.

### 1.7.2 Central Coast Blue

Central Coast Blue is a regional recycled water project with partner agencies consisting of Arroyo Grande, Grover Beach and Pismo Beach, with Pismo Beach serving as the lead agency. The OCSD and South San Luis Obispo County Sanitation District (SSLOCSD) are not participating in Phase I of the project, however both agencies have expressed support of the project and are cooperating with the partner agencies. The project is in the design phase and will develop a sustainable, drought resilient water supply and help protect the SMGB. The project consists of advanced treatment of effluent from the Pismo Beach wastewater treatment plant (WWTP) in Phase I and the South San Luis Obispo County Sanitation District (SSLOCSD) WWTP in Phase II (should it be deemed feasible and necessary) and injection of the purified water into the SMGB to reduce the risk of seawater intrusion and improve water supply sustainability for the region. Currently the water from both wastewater treatment plants is being treated and discharged to the ocean. Central Coast Blue will provide an opportunity to capture this lost water and use it to recharge the SMGB to create a drought-proof, sustainable water supply for the community by not only increasing the volume accessible in the aquifer but by also creating a barrier to prevent landward migration of seawater. Tasks related to the development of the project that were performed prior to and throughout 2021 include preliminary design, pilot plant operation and data collection, test injection well and monitoring well siting, construction, and testing, funding pursuits appropriation, cost/benefit sharing analysis, supplemental geophysics investigation, additional groundwater modeling with the Phase 1C model (see Section 1.7.3), and environmental review.

The intent of Central Coast Blue is to enable the partnering NCMA agencies to construct an advanced treatment facility (ATF) to produce advanced purified water (APW) to augment its water supply through injection to recharge the aquifer and develop a seawater intrusion barrier to improve water supply reliability for the area. In addition to the ATF—which will include microfiltration/ultrafiltration, reverse osmosis, and ultraviolet

disinfection with advanced oxidation treatment processes—the project will include construction of conveyance pipelines as well as injection and monitoring wells to inject and monitor the APW in the groundwater basin.

### 1.7.3 Phase 1 Groundwater Model

As part of Central Coast Blue planning and technical studies, a localized groundwater flow model (the Phase 1A model) was developed for the northern portion of the NCMA. The Phase 1A model evaluated the concept of injecting APW into the SMGB to increase aquifer recharge, improve water supply reliability, and help prevent future occurrences of seawater intrusion (CHG, 2017). Based on the results of the Phase 1A model and through funding by the SSLOCSD Supplemental Environmental Program, work was initiated in 2017 and continued through 2020 for development of the Phase 1B groundwater flow model (Geoscience Support Services, 2019). The domain of the Phase 1B model covers the entire NCMA, NMMA, and the portion of the SMVMA north of the Santa Maria River.

The purpose of the Phase 1B model was to expand the Phase 1A model and use the expanded model to evaluate a series of groundwater injection and extraction scenarios to further support Central Coast Blue. The Phase 1B model has been used to (1) more completely understand the groundwater conditions of the NCMA portion of the SMGB, (2) understand the groundwater flow dynamics and components of the groundwater water balance of the aquifer, (3) identify the locations of the proposed injection wells, (4) quantify the amount of water that can be injected, (5) evaluate strategies for preventing seawater intrusion, and (6) develop estimates of the overall yield that the Central Coast Blue stakeholders will be able to receive from the project.

The Phase 1C Groundwater Model was developed in 2021, incorporating findings from the airborne electromagnetic survey (see Section 1.7.4) and from the constructed test injection well to provide information on the initial conditions for seawater intrusion within the model (Geoscience Support Services, 2021). Previous assumptions for the location of the seawater-freshwater interface in the nearshore and offshore portions of the aquifer were based on limited information from historical onshore water quality results (see Section 3.3). The airborne electromagnetic survey provides a three-dimensional distribution model of salinity, or total dissolved solids (TDS), in the subsurface along the coast. This three-dimensional salinity model was used to estimate initial TDS concentrations in each model layer, including an estimation of the location of the seawater-freshwater interface (i.e., TDS concentration of 10,000 mg/L). The Phase 1C model is a refinement of the Phase 1B model. It has been used to gain an improved understanding of potential seawater intrusion under various predictive groundwater pumping and Central Coast Blue operation scenarios.

### 1.7.4 Airborne Electromagnetic Survey

In 2020, the City of Pismo Beach, through funding from the Proposition 1 Planning Grant Activities, contracted with Ramboll US Consulting, Inc., and SkyTEM Surveys to conduct airborne electromagnetic survey of a large portion of the NCMA portion of the SMGB utilizing the airborne electromagnetic method (AEM). The goal of the study is to acquire survey data to characterize and map subsurface geologic structures, define the variability of the resistivities found in the coastal zone, and gain an understanding of the offshore interface between the fresh and saline groundwater.

The SkyTEM airborne survey was flown in March 2020. Throughout 2020 and 2021, the acquired data were compiled and analyzed. The final report, which summarizes the airborne survey results and provides interpretation of the data, was delivered in January 2022 (Ramboll, 2022). The results of the study have generally enhanced understanding of groundwater flow within the SMGB and have been integral to the refinements incorporated into the Phase 1C Groundwater Model (see Section 1.7.3).



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## SECTION 2: Basin Setting

### 2.1 Setting

The Tri-Cities Mesa<sup>11</sup> in the northern portion of the NCMA is predominantly urban (residential/commercial). The Cienega Valley, a low-lying coastal stream and valley regime, is the area south of Arroyo Grande Creek in the central part of the area and is predominantly agricultural. The southern and southwestern portions of the area are composed of beach dunes and small lakes primarily managed by California Department of Parks and Recreation as a recreational area and a sensitive species habitat.

### 2.2 Precipitation

Each year, climatological and hydrologic (stream flow) data for the NCMA are added to the NCMA database. Annual precipitation from 1950 to 2021 is presented in **Figure 5**, on page 20.

Historical rainfall data are compiled on a monthly basis for the following two stations:<sup>12</sup>

- DWR California Irrigation Management Information System (CIMIS) Nipomo Station (No. 202) (Nipomo station) for 2006 to present
- San Luis Obispo County-operated rain gauge (No. SLO 795) in Oceano for 2000 to present

The locations of the two stations are shown in **Figure 6**, on page 21. In recent years, it was noted that the CIMIS Nipomo station may have been recording irrigation overspray as precipitation and the precipitation data from the station may not be reliable. However, the evapotranspiration data are still considered reliable. For this reason and because the DRI station was discontinued in 2017, the County-operated gauge (No. SLO 795) is the sole source of precipitation data used in this 2021 Annual Report. **Figure 5**, on page 20, is a composite graph combining data from the DRI and County stations and illustrating annual rainfall totals from available data from 1950 through 2021 (on a calendar-year basis). Average annual rainfall for the NCMA is approximately 15.6 inches.

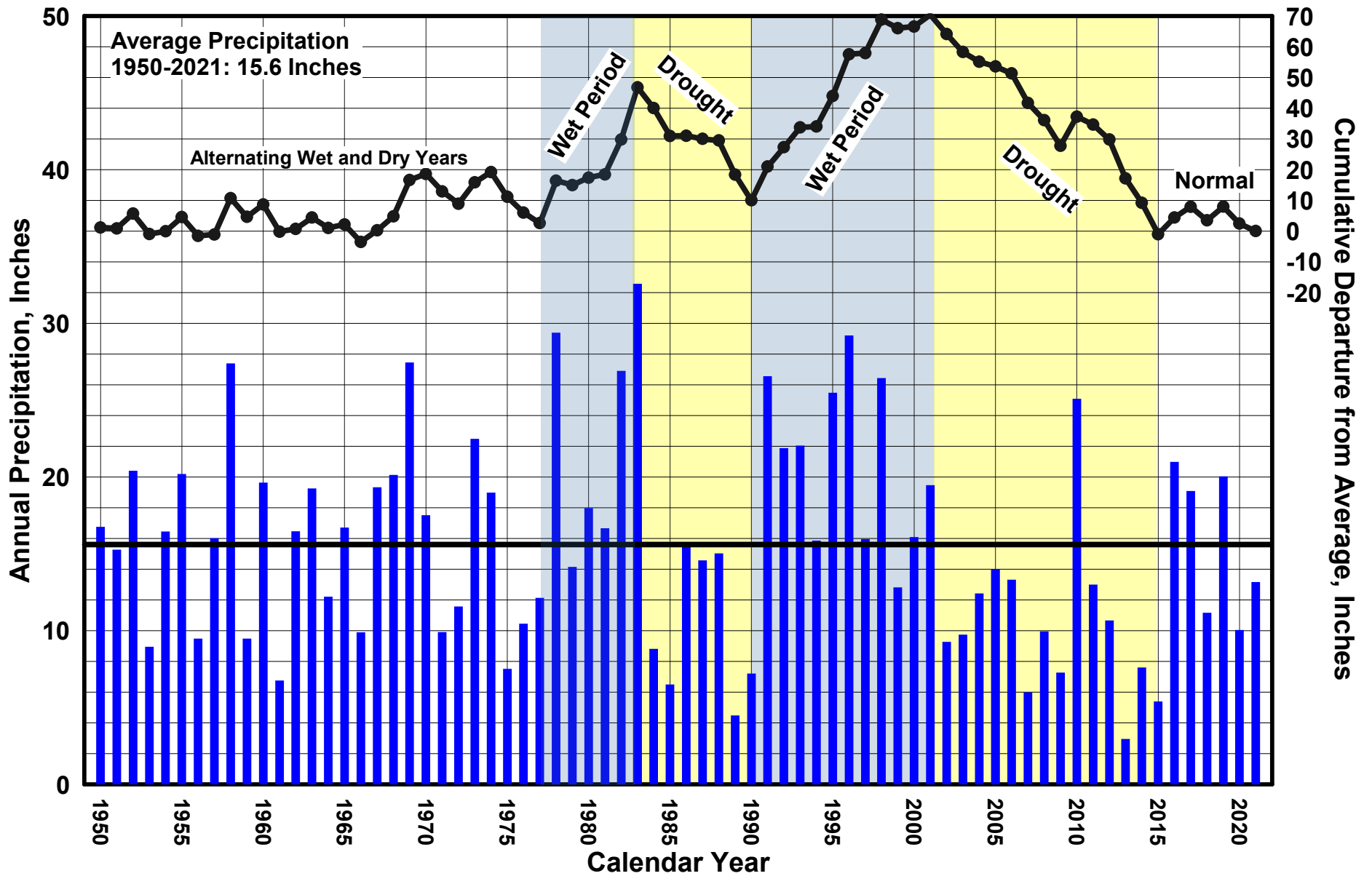
Monthly rainfall and evapotranspiration (ET) for 2021 as well as average monthly historical rainfall and ET are presented in **Figure 7**, on page 22. During 2021, below-average rainfall occurred for 9 months and above-average rainfall occurred during the other 3 months. The total for the year was 13.2 inches, more than 2 inches below the average annual rainfall for the area.

**Figure 5**, on page 20, illustrates annual rainfall and shows several multi-year drought cycles (e.g., 6 years, 1984 through 1990) followed by cycles of above-average rainfall (e.g., 7 years, 1991 through 1998). Except for 2010, the period 2007 through 2015 (8 years) experienced below-average annual rainfall indicating a dry hydrologic period. This pattern continued into late 2016, when the hydrologic pattern appeared to have broken the serious drought that the area (and state) had experienced for the previous 5 years. Annual rainfall totals since 2016 have shown normal fluctuations between wet and dry years, as illustrated in **Figure 5**, on page 20.

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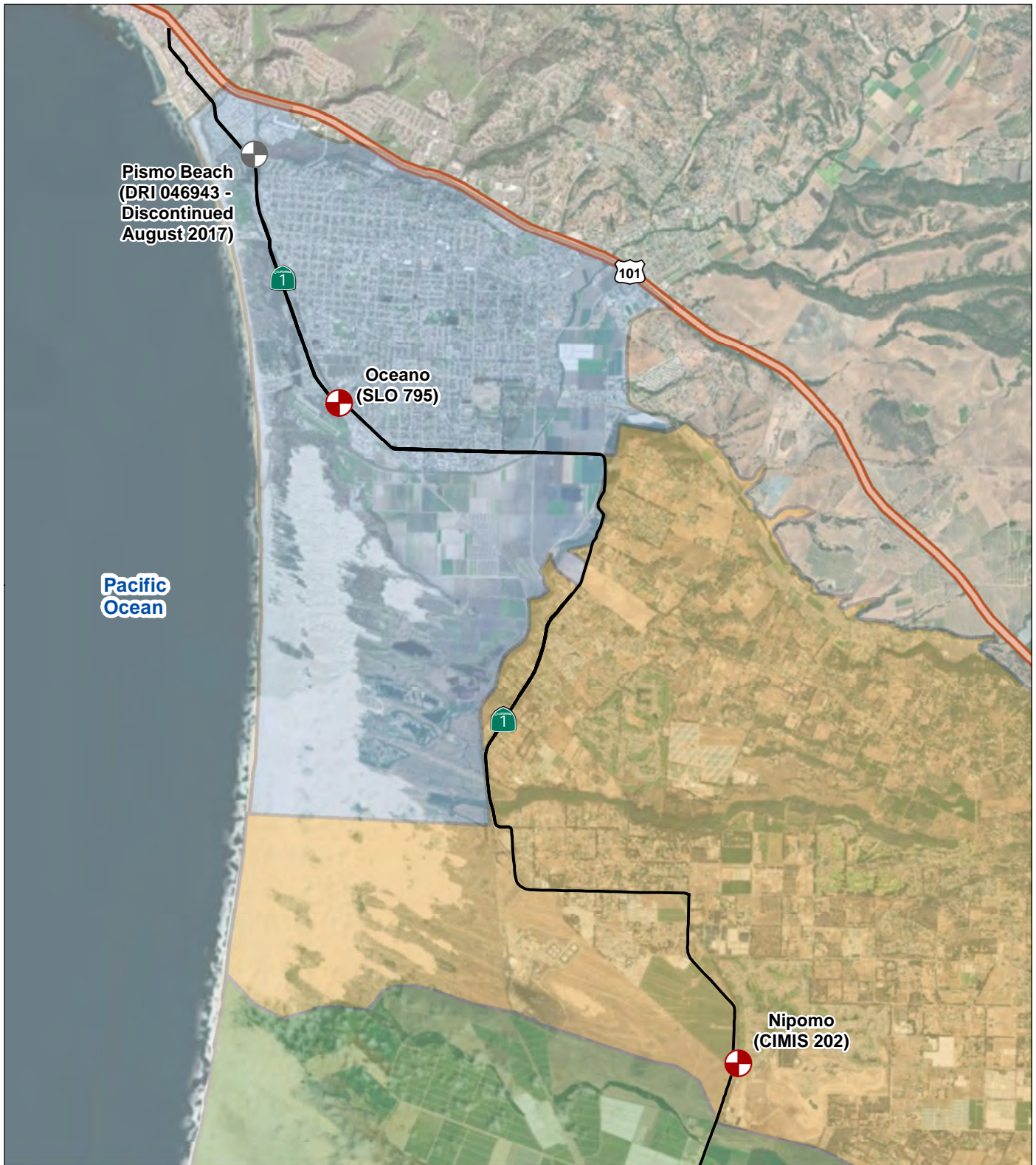
<sup>11</sup> Tri-Cities Mesa is an upland physiographic feature covering approximately four square miles. It is a remnant of the deposition that was laid down, historically, by Pismo and Arroyo Grande Creeks. Older sand dunes now cover the area (DWR, 1970).






<sup>12</sup> The Desert Research Institute (DRI) Western Regional Climate Center Pismo Station (Coop ID: 046943) was discontinued in August of 2017.



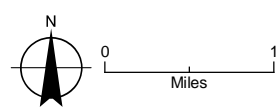
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**FIGURE 5. ANNUAL PRECIPITATION 1950 TO 2021**  
 Northern Cities Management Area  
 San Luis Obispo County, California



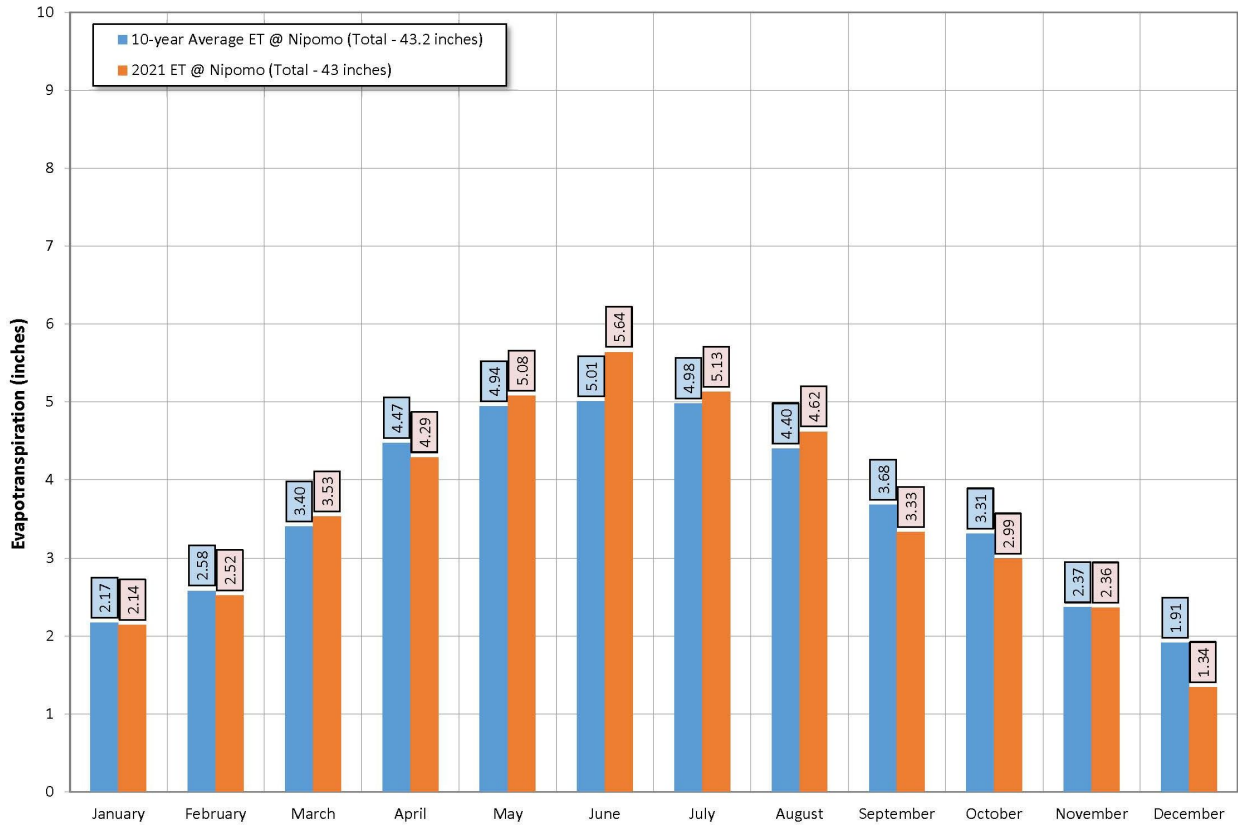
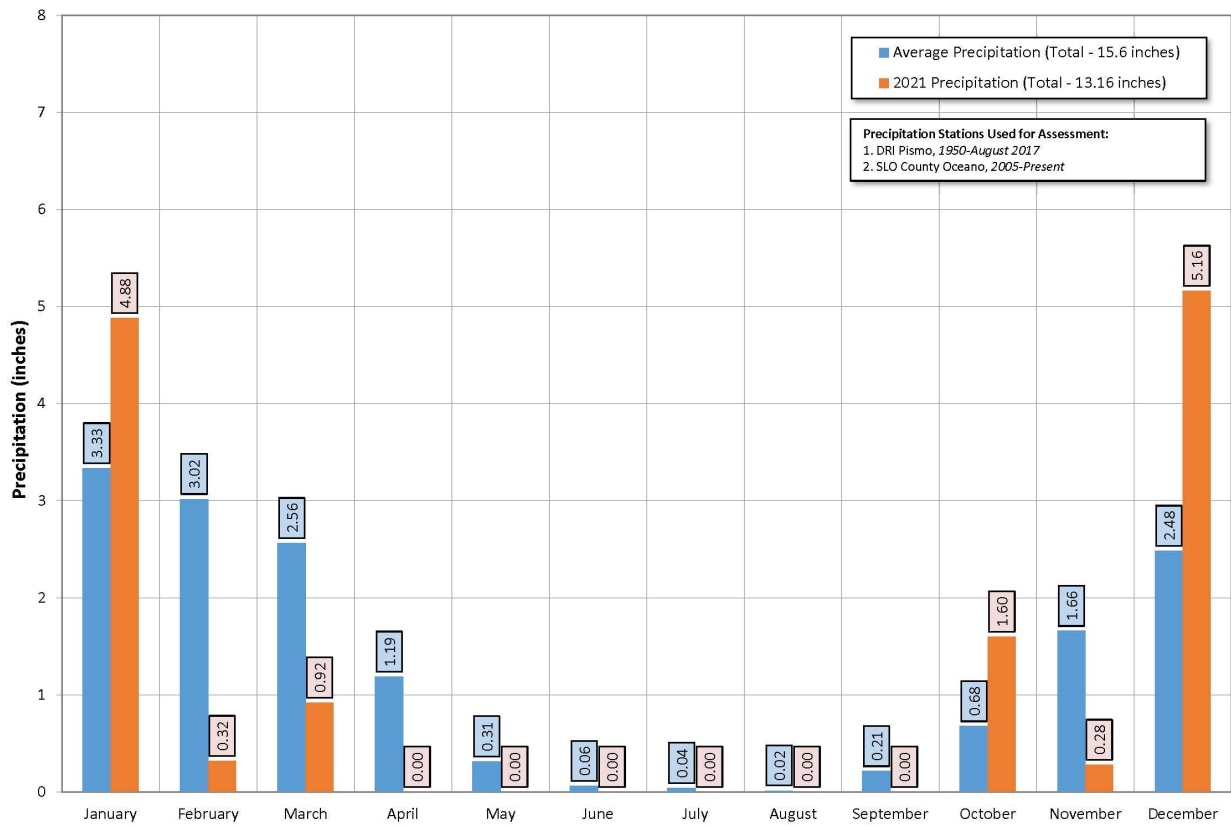
- LEGEND**
-  Active Weather Station
  -  Inactive Weather Station
  -  Nipomo Mesa Management Area
  -  Northern Cities Management Area
  -  Santa Maria Valley Management Area

**FIGURE 6**  
**Location of Precipitation Stations**  
 Northern Cities Management Area  
 San Luis Obispo County, California



Date: January 16, 2019





**FIGURE 7. MONTHLY AND AVERAGE PRECIPITATION AND EVAPOTRANSPIRATION**  
 Northern Cities Management Area  
 San Luis Obispo County, California



## 2.3 Evapotranspiration

CIMIS maintains weather stations in locations throughout the state to provide real-time wind speed, humidity, and evapotranspiration data. The nearest CIMIS station to the NCMA is the Nipomo station (see **Figure 6**, on page 21). The Nipomo station has gathered data since 2006. While this station may have been subject to irrigation overspray in recent years (noted in Section 2.2, Precipitation, above), the apparent irrigation overspray does not have a significant impact on the measurements used for calculating ET. The monthly ET data for the Nipomo station is shown in **Figure 7**, on page 22, for 2021 and average conditions (over 10 years). The ET rate affects recharge potential of rainfall and the amount of outdoor water use (irrigation).

## 2.4 Geology and Hydrogeology

The current understanding of the geologic framework and hydrogeologic setting is based on numerous previous investigations, particularly Woodring and Bramlette (1950), Worts (1951), Miller and Evenson (1966), DWR (1970, 1979, and 2002), Fugro (2015), Geoscience Support Services (2019 and 2021), and Ramboll (2022).

The NCMA overlies the northwest portion of the SMGB. There are two principal aquifers in the NCMA portion of the SMGB. Groundwater pumped from the sedimentary deposits that make up the main municipal production aquifer underlying the NCMA is derived from the Paso Robles Formation<sup>13</sup> and the underlying Careaga Sand.<sup>14</sup> The Paso Robles Formation and Careaga Sand aquifers together are referred to as the deep aquifer system in this report. All municipal pumping in the NCMA occurs on the Tri-Cities Mesa and is produced from the deep aquifer.

The second principal aquifer is the alluvial aquifer, consisting of Quaternary-age alluvial sediments of Arroyo Grande Creek, Los Berros Creek, and the Cienega Valley. All agricultural groundwater production in the Cienega Valley is presumed to be extracted from a lower, confined to semi-confined portion of the alluvial aquifer (DWR, 1970).

Several faults either cross or form the boundary of the NCMA, as identified by DWR (2002), Pacific Gas & Electric (PG&E, 2014) (PG&E), and others. The Oceano Fault (USGS, 2006) trends northwest-southeast across the central portion of NCMA and has been extensively studied by PG&E (2014). Offshore, the Oceano Fault connects with the Hosgri and Shoreline fault systems several miles west of the coast. Onshore, the Oceano Fault consists of two mapped fault splays, including the main trace of the Oceano Fault as well as the Santa Maria River Fault, which diverges northward of the Oceano Fault through the Cienega Valley before trending into and across the Nipomo Mesa.

It is unknown the extent to which the Oceano and Santa Maria River faults impede groundwater flow within the deep aquifer system materials. However, movement on the faults, as mapped by PG&E (2014), may suggest a possible impediment to flow within the Careaga Sand and possibly the Paso Robles Formation. PG&E (2014) suggests that the existence of the Santa Maria River Fault is “uncertain.” However, the water elevation contour maps of the NCMA (**Figure 8**, on page 28, and **Figure 9**, on page 29) (discussed in more

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<sup>13</sup> The Plio-Pleistocene-age Paso Robles Formation aquifer consists of unconsolidated deposits ranging from fine to coarse sand and gravel, silty to clayey sand and gravel, and fine to medium silty sand. Regionally, the formation is compartmentalized into two to five aquifer zones designated from top to bottom as the A to E Zones. These aquifer zones are separated by silt and clay confining beds near the coast and are generally merged inland (DWR, 1970).

<sup>14</sup> The Pliocene-age Careaga Sand consists of unconsolidated to well-cemented calcareous coarse sand with gravel, fine to medium sand, and silty sand. The Careaga Sand is of marine origin (DWR, 1970).

detail in Section 3.1.1) may suggest that the Santa Maria River Fault plays a potential, but unknown, role in groundwater flow across the NCMA.

The Wilmar Avenue Fault generally forms the northern boundary of the NCMA, apparently acting as a barrier to groundwater flow from the older consolidated materials north of the fault southward into the SMGB. There is no evidence, however, that the Wilmar Avenue Fault impedes alluvial flow in the Pismo Creek, Meadow Creek, or Arroyo Grande Creek alluvial valleys.

## 2.5 Groundwater Flow

The groundwater system of the NCMA has several sources of recharge including precipitation, agricultural return flow, seepage from stream flow, and subsurface inflow from adjacent areas. Precipitation-driven recharge is enhanced by several stormwater retention ponds in NCMA.<sup>15</sup> According to the DWR Bulletin 63-3 report (DWR, 1970), both the Paso Robles Formation aquifer and the lower confined portion of the Cienega Valley alluvial aquifer are recharged primarily from subsurface groundwater inflow from the east, where the overlying confining layers are thin to nonexistent (DWR, 1970). These recharge areas to the east include inland reaches of Arroyo Grande Valley and portions of Nipomo Mesa (DWR, 1970). Groundwater quality data presented in DWR Bulletin 63-3 (DWR, 1970), and corroborated with data available through the Central Coast Regional Water Quality Control Board Irrigated Lands Regulatory Program (ILRP), show evidence of recharge to the alluvial aquifer of the Cienega Valley from the Paso Robles Formation aquifer on the Nipomo Mesa. However, this recharge mechanism appears to be slowing due to declining water levels on the Nipomo Mesa as documented in recent NMMA annual reports (see Section 6.1.1).

The deep aquifer system is also recharged to a lesser extent by percolation of direct precipitation and agricultural return flow on the Tri-Cities Mesa (DWR, 1970). In addition, some return flows occur from imported surface supply sources including Lopez Lake and the California State Water Project (SWP). Discharge in the region is dominated by groundwater production from pumping wells, but minor discharge certainly occurs through phreatophyte<sup>16</sup> consumption and surface water outflow. Historically, groundwater elevations in wells throughout the NCMA and resulting hydraulic gradients show that subsurface outflow discharge occurs westward from the groundwater basin to the ocean. This subsurface outflow is an important control to limit the potential of seawater intrusion. This westward gradient and direction of groundwater flow still is prevalent throughout the northern portion of NCMA, although there is some evidence recently that the westward gradient may have reversed in the area south of Cienega Valley.

The following descriptions of the boundary conditions of the NCMA are derived primarily from Todd (2007). The eastern boundary is coincident with the SLOFC&WCD Zone 3 management boundary and with the northwestern boundary of the NMMA. Aquifer materials of similar formation, provenance, and characteristics are present across most of this boundary, which allows subsurface flow to occur between the NCMA and NMMA.

The northern and northwestern boundary, established by the Court during the 2005 Stipulation, is coincident with the Wilmar Avenue Fault, which is located approximately along Highway 101 from Pismo Creek to the southeastern edge of the Arroyo Grande Valley. There is likely insignificant subsurface flow from the

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<sup>15</sup> Within their jurisdictions, Arroyo Grande and Grover Beach each maintain stormwater retention ponds; the SLOFCWCD maintains the stormwater system, including retention ponds, in OCSD. These ponds collect stormwater runoff, allowing the runoff to recharge the underlying aquifers.

<sup>16</sup> A phreatophyte is a deep-rooted plant that obtains a significant portion of the water that it needs from the water table. Phreatophytes are plants that are supplied with surface water or the upper portion of the near-surface water table and often have their roots constantly in touch with moisture.

consolidated materials (primarily Pismo Formation) north of the Wilmar Avenue Fault across the boundary into the SMGB; however, basin inflow occurs within the underflow associated with alluvial valleys of Arroyo Grande and Pismo creeks.

The southern boundary of the NCMA is an east-west line, roughly located along the trend of Black Lake Canyon and perpendicular to the coastline. Historically, it appears that groundwater flow is typically roughly parallel to the boundary. This suggests that little to no subsurface inflow occurs across this boundary.

The western boundary of the NCMA follows the coastline from Pismo Creek in the north to Black Lake Canyon. Given the generally westward groundwater gradient in the area, this boundary is the site of subsurface outflow and is an important impediment to seawater intrusion. However, the boundary is susceptible to seawater intrusion if groundwater elevations onshore decline, such as may be occurring seasonally in the southeast portion of NCMA along the boundary with NMMA.

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## SECTION 3: Groundwater Conditions

### 3.1 Groundwater Levels

Groundwater elevation data are gathered from the network of wells throughout the NCMA to monitor the effects of groundwater use and recharge, and to monitor the threat of seawater intrusion. Over time, analysis of these groundwater elevation data has included development of groundwater surface contour maps, hydrographs, and an index of key sentry well water elevations. The historical groundwater elevation data are provided in Appendix A.

#### 3.1.1 Groundwater Level Contour Maps

Contoured groundwater elevations for the spring (April 2021) and fall (October 2021) monitoring events, including data from the County monitoring program, are shown in **Figure 8**, on page 28, and **Figure 9**, on page 29, respectively. From an increased understanding of the groundwater basin aquifer system and to be consistent with recent work completed for the Phase 1B model, the groundwater elevation analysis was performed separately for each of the two principal aquifers. As described earlier (Section 2.4), the two principal aquifers are the deep aquifer (consisting of the Paso Robles Formation and the Careaga Sand) from which all municipal production is pumped, and the alluvial aquifer within the Cienega Valley, from which all agricultural production is pumped.

Groundwater level contours for April 2021 are presented in **Figure 8**, on page 28. Spring groundwater elevation contours in the deep aquifer system north of the Santa Maria River Fault show a westerly to southwesterly groundwater flow. The groundwater gradient and flow in the deep aquifer system in the southern portion of the NCMA are generally inferred on the basis of historical records, historical trends, and water level data from the NMMA farther east. This is due to the limited number of wells and water level data in the southernmost portion of the NCMA that is dominated by sensitive-species dunes and California State Parks land.

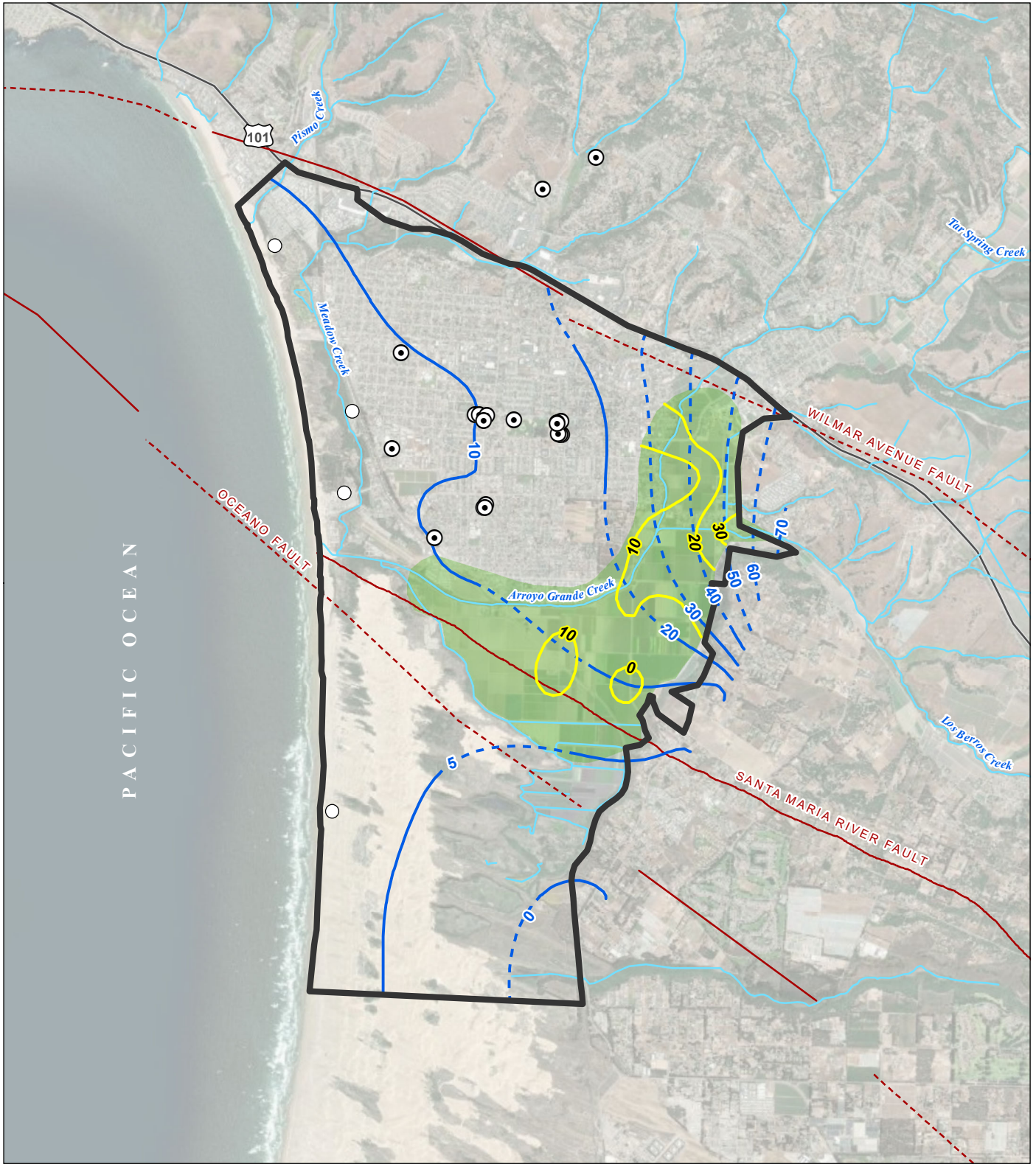
Spring groundwater contours in the alluvial aquifer exhibit a gradient and flow direction that generally follows the alignment of Arroyo Grande Creek. The alluvial groundwater contours also indicate an inflow of groundwater from the Los Berros Creek drainage (**Figure 8**, on page 28).

Agricultural groundwater pumping results in seasonal drawdown of the alluvial aquifer in the Cienega Valley south and east of Arroyo Grande Creek. As shown on **Figure 8**, on page 28, the April 2021 alluvial groundwater elevations in the Cienega Valley are in the range of below 0 feet to more than 30 feet North American Vertical Datum 1988 (NAVD 88).<sup>17</sup> Similar to April 2020, these data show formation of a subdued pumping trough in the Cienega Valley, with groundwater elevations generally below sea level in the center of the depression. This formation of a pumping trough early in the year may be due to a relatively dry February and March preceding the collection of groundwater elevation measurements in April 2021.

April 2021 groundwater elevations in the deep aquifer system main production zone along the coast ranged from 7.0 to 9.0 feet above sea level. Slight pumping effects are noted in the area of concentrated municipal pumping on Tri-Cities Mesa. Spring-time pumping effects have occasionally occurred in the past, generally following a dry winter during a period of drought. Prior to this year, spring-time pumping effects had not been observed since 2017.

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<sup>17</sup> Note that NAVD 88 is 2.72 feet lower than mean sea level, as recorded at the Port San Luis tide station datum (available at <https://tidesandcurrents.noaa.gov/datums.html?id=9412110>); however, for the purposes of this report it will be referred to as sea level.



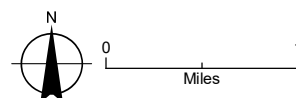
**LEGEND**

- |   |                                   |
|---|-----------------------------------|
| ○ Sentry Well                                 | <b>All Other Features</b>         |
| ⊙ Municipal Well                              | ▭ Northern Cities Management Area |
| — Alluvial Groundwater Contour (feet, NAVD88) | ■ Cienega Valley                  |
| — Deep Groundwater Contour (feet, NAVD88)     | — Interstate                      |
| — Fault (dashed where inferred)               | — Watercourse                     |

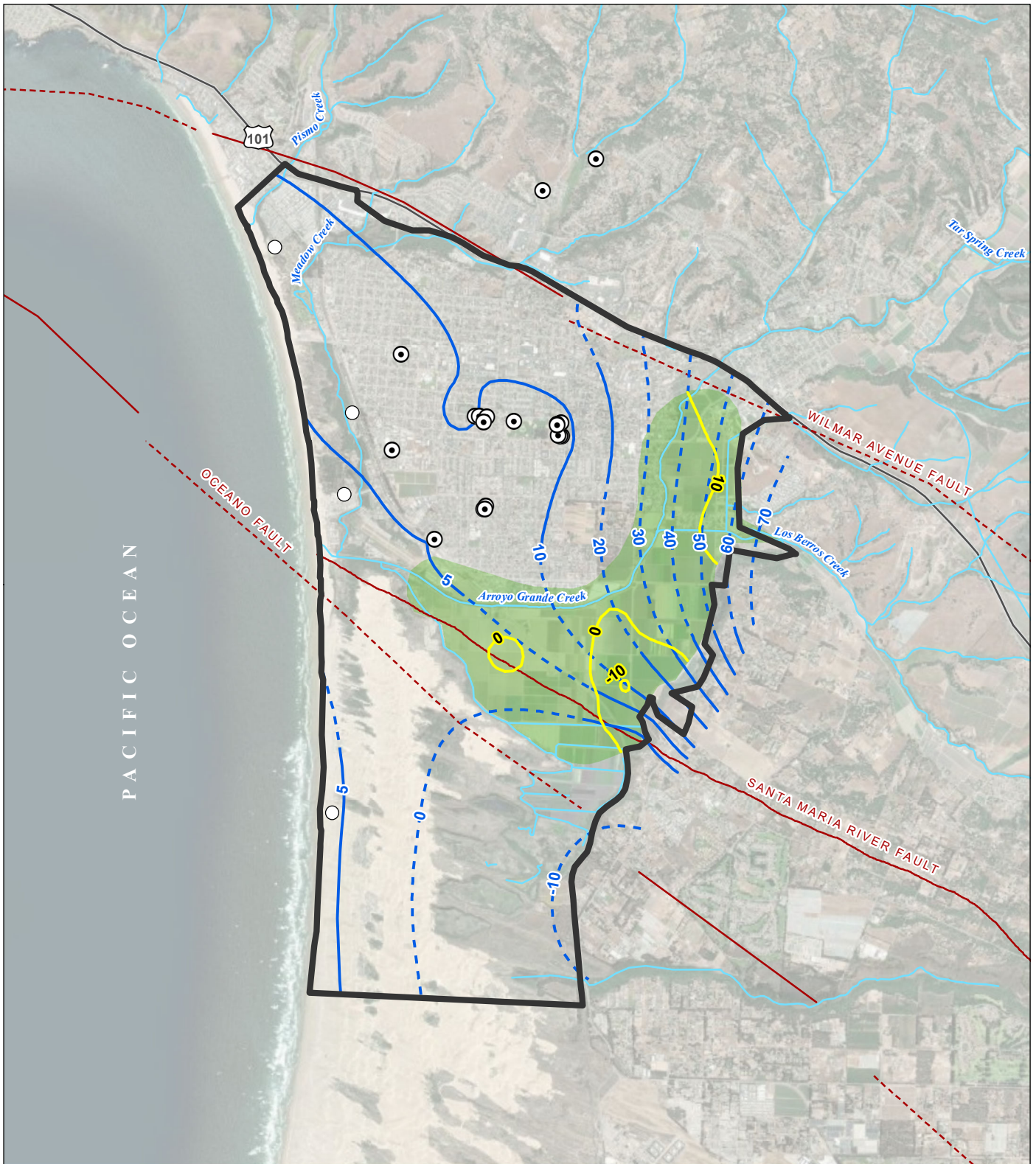
Notes: NAVD88 - North American Vertical Datum of 1988  
 Date: December 29, 2021  
 Data Sources: SLO County, USGS, NCGMA and NMMA Agencies, California Geological Survey, ESRI

Document Path: Y:\0672\_Northern\_Cities\_Management\_Area\Source\_Figures\008\_2021\_Annual\_Report\Figure8\_NCGMA\_Water\_Level\_Contours\_Spring\_2021.mxd

**FIGURE 8**  
**Groundwater Elevation Contours Spring 2021**  
 Northern Cities Management Area  
 San Luis Obispo County, California







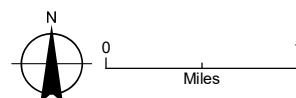
**LEGEND**

- |   |                                   |
|---|-----------------------------------|
| ○ Sentry Well                                 | <b>All Other Features</b>         |
| ⊙ Municipal Well                              | ▭ Northern Cities Management Area |
| — Alluvial Groundwater Contour (feet, NAVD88) | ■ Cienega Valley                  |
| — Deep Groundwater Contour (feet, NAVD88)     | — Interstate                      |
| — Fault (dashed where inferred)               | — Watercourse                     |

Notes: NAVD88 - North American Vertical Datum of 1988  
 Date: December 29, 2021  
 Data Sources: SLO County, USGS, NCMA and NMMA Agencies, California Geological Survey, ESRI

**FIGURE 9**

**Groundwater Elevation Contours Fall 2021**  
 Northern Cities Management Area  
 San Luis Obispo County, California



Groundwater elevation contours for October 2021 are presented in **Figure 9**, on page 29. Fall groundwater contours in the deep aquifer system north of the Santa Maria River Fault show a generally west-to-southwesterly groundwater flow, similar to conditions in the spring, but with some minor pumping effects evident in the area of the municipal wells. Fall groundwater contours in the alluvial aquifer show pumping effects from agricultural groundwater production, including a pronounced pumping depression in the southeast portion of the Cienega Valley (**Figure 9**, on page 29). Similar to observed trends for spring 2021, the fall alluvial groundwater contours indicate an inflow of groundwater from the Los Berros Creek drainage (**Figure 9**, on page 29).

The alluvial aquifer groundwater conditions in October 2021 shows a decline of approximately 1 to 14 feet from elevations observed in April 2021. These conditions are consistent with the pumping depressions observed historically during the fall within the Cienega Valley. The alluvial groundwater elevation in the pumping depression in October 2021, at 11.6 feet below sea level, was 2.8 feet higher than was present in October 2020.

October 2021 groundwater elevations in the deep aquifer system main production zone along the coast ranged from 3.8 to 7.0 feet above sea level.

### 3.1.2 Historical Water Level Trends

Hydrographs of five wells in the NCMA are presented in **Figure 10**, on page 31. Two of the wells are completed in the deep aquifer system (32D03 and 32D11) and three of the wells are completed in the alluvial aquifer within the Cienega Valley (28K02, 30K03, and 33K03).

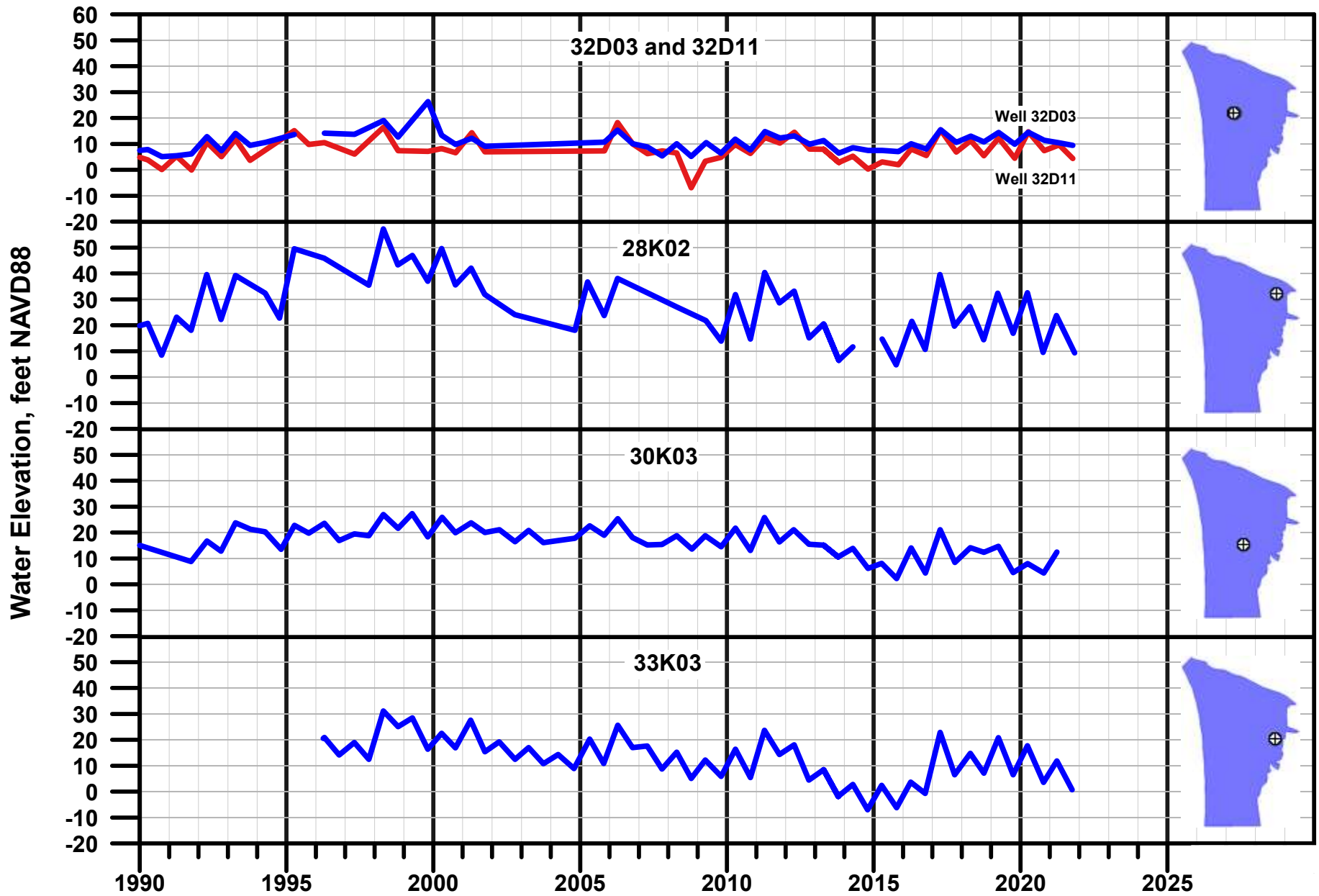
The hydrographs for wells 32D03 and 32D11 (**Figure 10**, on page 31) are paired hydrographs for deep aquifer system wells in the vicinity of the municipal wellfields. Depending on the duration of pumping of the municipal wells, water levels in these wells historically have been below the levels of wells in other areas of the NCMA for prolonged periods of time. The hydrographs show that, historically, groundwater elevations in these wells generally have been above mean sea level. In 2007 to 2009, an area of lower groundwater elevations (a trough) beneath the active wellfield appeared. Groundwater pumping was at its peak in 2007 to 2009 (in comparison with pumping of the last 30 years) and contributed to the apparent seawater intrusion event in the coastal wells in 2009.

As illustrated in **Figure 10**, on page 31, the water elevations of all the wells, including the paired deep aquifer system wells 32D03 and 32D11, exhibited a steady decline from 2011 to 2016, during which time rainfall was below normal every year. In this period, groundwater elevations declined to near sea level or, in the case of alluvial aquifer well 33K03, to below sea level. By October 2016, the groundwater elevations in these wells were generally below the levels observed in 2009–2010.

In 2016 and 2017, these five wells each exhibited an overall increase in water levels (with the exception of the normal, seasonal decline during the summer), generally reaching similar water levels as observed in 2011. However, since 2017, water levels have returned to a generally declining trend in all of the wells. The water level in well 33K03, located near the NCMA/NMMA boundary, is currently less than one foot above sea level.

### 3.1.3 Sentry Wells and the Deep Well Index

Regular monitoring of water elevations in clustered sentry wells located along the coast are an essential tool for tracking critical groundwater elevation changes at the coast. Groundwater elevations in these wells are monitored quarterly as part of the sentry well monitoring program. As shown by the hydrographs for the five sentry well clusters (**Figure 11**, on page 32), the sentry wells provide a long history of groundwater elevations.

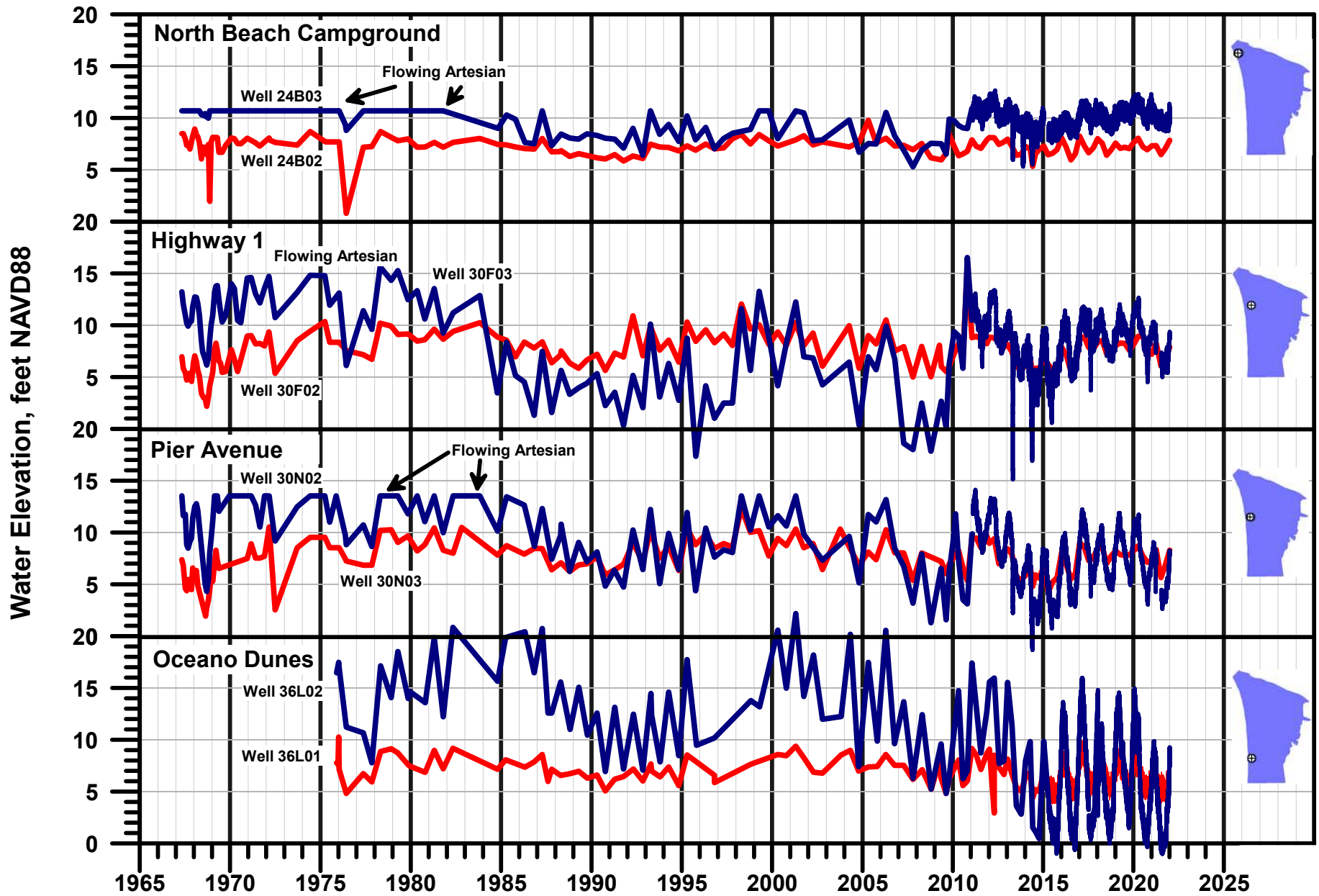


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**FIGURE 10. SELECTED HYDROGRAPHS**  
 Northern Cities Management Area  
 San Luis Obispo County, California

Notes:  
 NAVD88 - North American Vertical Datum of 1988





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**FIGURE 11. SENTRY WELL HYDROGRAPHS**  
 Northern Cities Management Area  
 San Luis Obispo County, California

Notes:  
 NAVD88 - North American Vertical Datum of 1988





Inspection of the recent data shown in **Figure 11**, on page 32, compared with the historical record illustrates some noteworthy trends:

- From 2013 until near the end of 2016, the water level trend of well 30N02—one of the wells that experienced elevated TDS and chloride levels (i.e., water quality degradation) in 2009–2010—looked quite similar to the water level trend of the well in 2007–2010, immediately before and during the period of incipient seawater intrusion. This trend was noteworthy and alarming. However, since the end of 2016 and continuing through 2020, the downward trend reversed and stabilized with water elevations seasonally fluctuating around 8 feet above sea level. In 2021, water elevations have again begun to trend slightly downward, likely in response to below average rainfall in 2020, and 2021.
- The decline in water levels from 2005 to 2016 in the Oceano Dunes wells (36L01 and 36L02) was also notable and potentially significant, particularly in well 36L01, which is screened across the Paso Robles Formation. In 2016, both wells reached historical low water elevations. However, since the end of 2016 and continuing through 2020, both wells had recovered to less-alarming levels. Similar to well 30N02, water elevations in the Oceano Dunes wells have again begun to trend slightly downward, likely in response to below average rainfall in 2020, and 2021.

The deepest wells in the clusters, 24B03, 30F03, and 30N02, were previously identified as key wells to monitor for potential seawater intrusion and were suggested to reflect the net effect of changing groundwater recharge and discharge conditions in the primary production zone of the deep aquifer system. One of the thresholds to track the status and apparent health of the aquifer is to average the groundwater elevations from these three deep sentry wells to generate a single, representative index, called the Deep Well Index. Previous studies suggested a Deep Well Index value of 7.5 feet above sea level as a minimum threshold, or trigger value, below which the aquifer is at risk for eastward migration of seawater and a subsequent threat of encroaching seawater intrusion. Historical variation of this index value is represented by the average deep sentry well elevations in **Figure 12**, on page 35.

Inspection of the Deep Well Index in 2008–2009, prior to the period of water quality degradation in wells 30N03 and 30N02, shows that the Deep Well Index dropped below the 7.5-foot trigger value and remained below that level for almost 2 years. It appears that prolonged levels below the threshold may be causing the degradation. Since the start of the recent drought in 2011, the Deep Well Index dropped several times below the threshold, but usually for only a few months at a time.

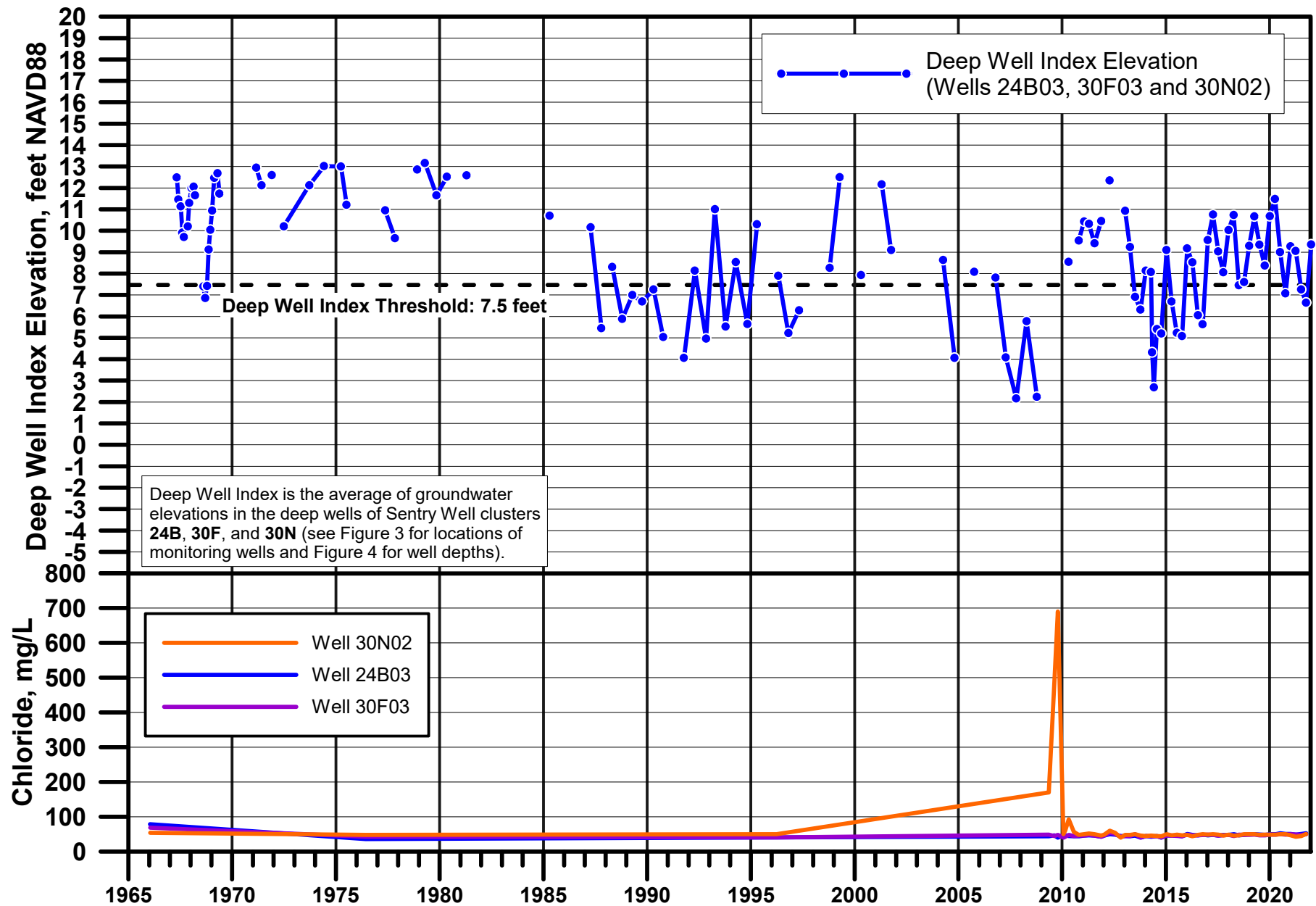
In 2021, the Deep Well Index started the year above the trigger value with an index value of more than 9 feet in January. It continued to rise, reached a high of nearly 10 feet during February, and then began to decline. The index value dropped below the 7.5-foot trigger value by July and continued to fall to a low point of just over 6 feet in late October. A slow recovery occurred through November, followed by a more rapid recovery in December, coincident with the above average monthly rainfall received in December. The index value continued to rise throughout the end of the year and finished 2021 at about 9 feet above sea level (**Figure 12**, on page 35).

Key wells—including 24B03, 30F03, 30N02, 36L01, 36L02, and 32C03—are instrumented with pressure transducers equipped with conductivity probes that periodically record water level, water temperature, and conductivity (**Figures 13 through 18**, on pages 36 through 41). It should be noted that transducer malfunctions have resulted in variable conductivity data in some of the wells during certain years, including 2015 and 2019. Malfunctioning transducers have been replaced and continue to be monitored in an ongoing effort to maintain a properly functioning monitoring network.

Wells 24B03, 30F03, and 30N02 comprise the wells used to calculate the Deep Well Index. Wells 36L01 and 36L02 are adjacent to the coast. Well 32C03 is the easternmost well and adjacent to the boundary between the NCMA and NMMA. The following discusses 2021 water levels for these key wells:

- **Deep Well Index Wells:** The Deep Well Index wells exhibited a pattern throughout 2021 that is consistent with previous years. The water levels in wells 24B03, 30F03, and 30N02 generally declined starting in February 2021 and continued to decline into October when they began to rise.
- Also consistent with patterns seen in previous years is the variability of aquifer response among the three wells. Well 24B03, the northernmost well and located in the North Beach Campground, maintains a relatively stable and moderated water level throughout the year and consistently sustains groundwater elevations higher than the Deep Well Index value. The water level in 24B03 mitigates the water levels in 30N02, which typically maintain levels consistently deeper than the Deep Well Index. Well 30F03 generally closely follows the Deep Well Index value.
- **Coastal Wells:** The groundwater elevation in well 36L01, screened within the Paso Robles Formation, remained 5 to 7 feet above sea level throughout 2021 and remained stable within the relatively narrow historical range. The water level in well 36L02, which is screened within the Careaga Sand, illustrates a much greater seasonal fluctuation than is observed in 36L01. The water elevation in 36L02 dropped slightly below sea level in late July and remained below sea level into late-August.
- **NCMA/NMMA Boundary:** Well 32C03, which shows regular seasonal fluctuations, remained above sea level throughout all of 2017, 2018, 2019, 2020, and 2021, in contrast with the prior 4 years when the water level dropped below sea level in August and remained at a low elevation until early October.



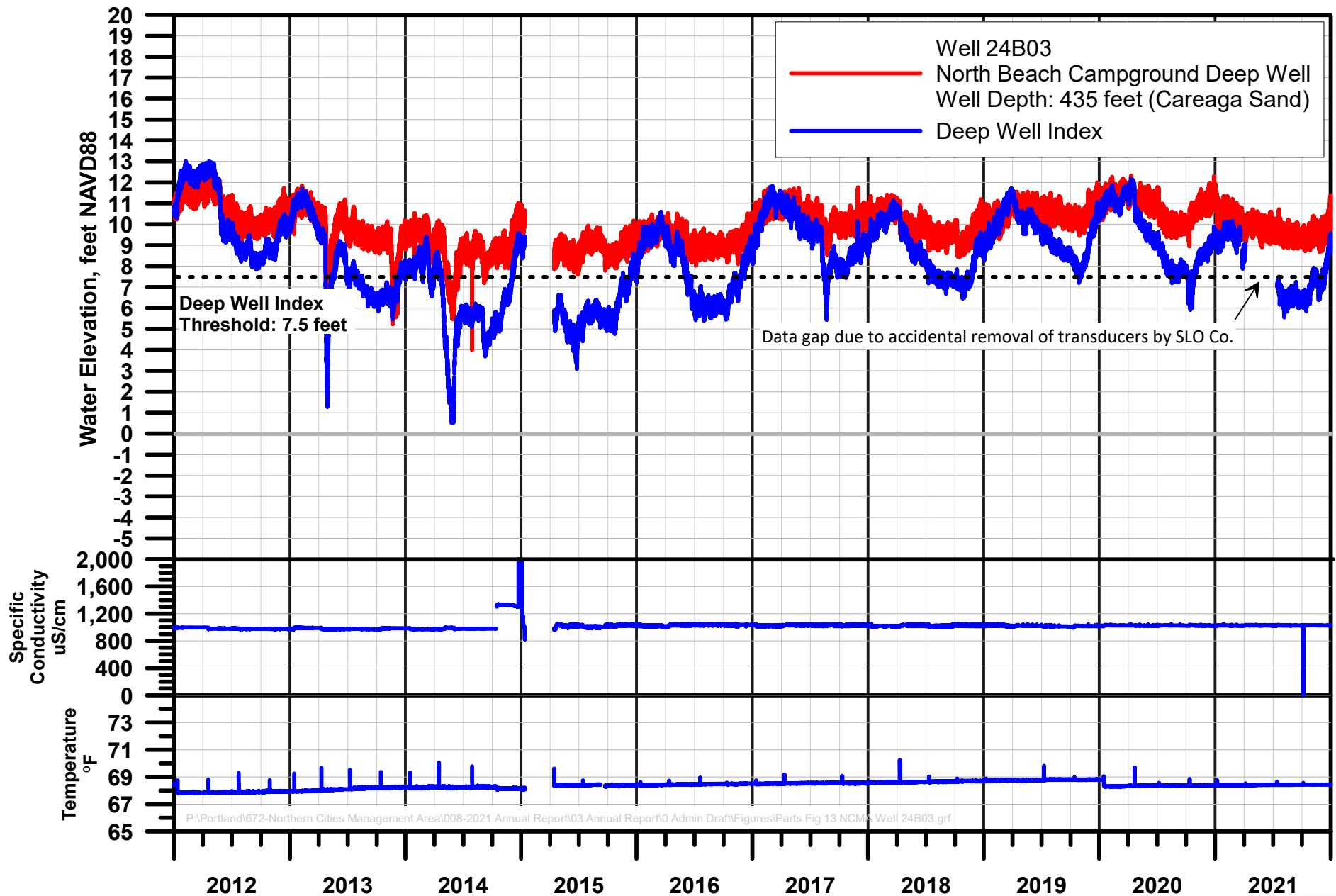


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**FIGURE 12. HYDROGRAPH OF DEEP WELL INDEX ELEVATION**  
Northern Cities Management Area  
San Luis Obispo County, California

Notes:  
NAVD88 - North American Vertical Datum of 1988  
mg/L - milligrams per liter

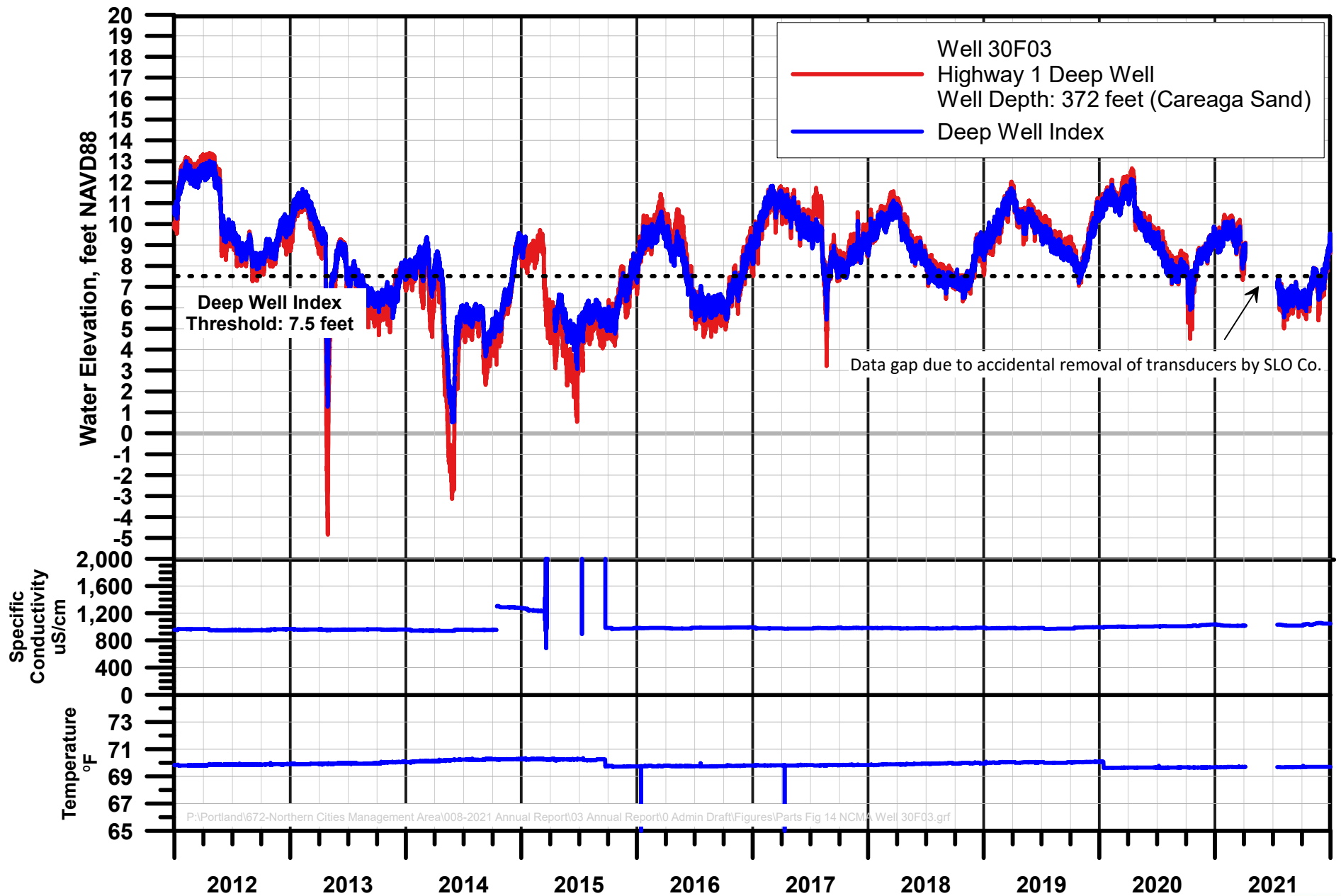




**FIGURE 13. WATER ELEVATION, CONDUCTIVITY, AND TEMPERATURE, WELL 24B03**

Northern Cities Management Area  
San Luis Obispo County, California

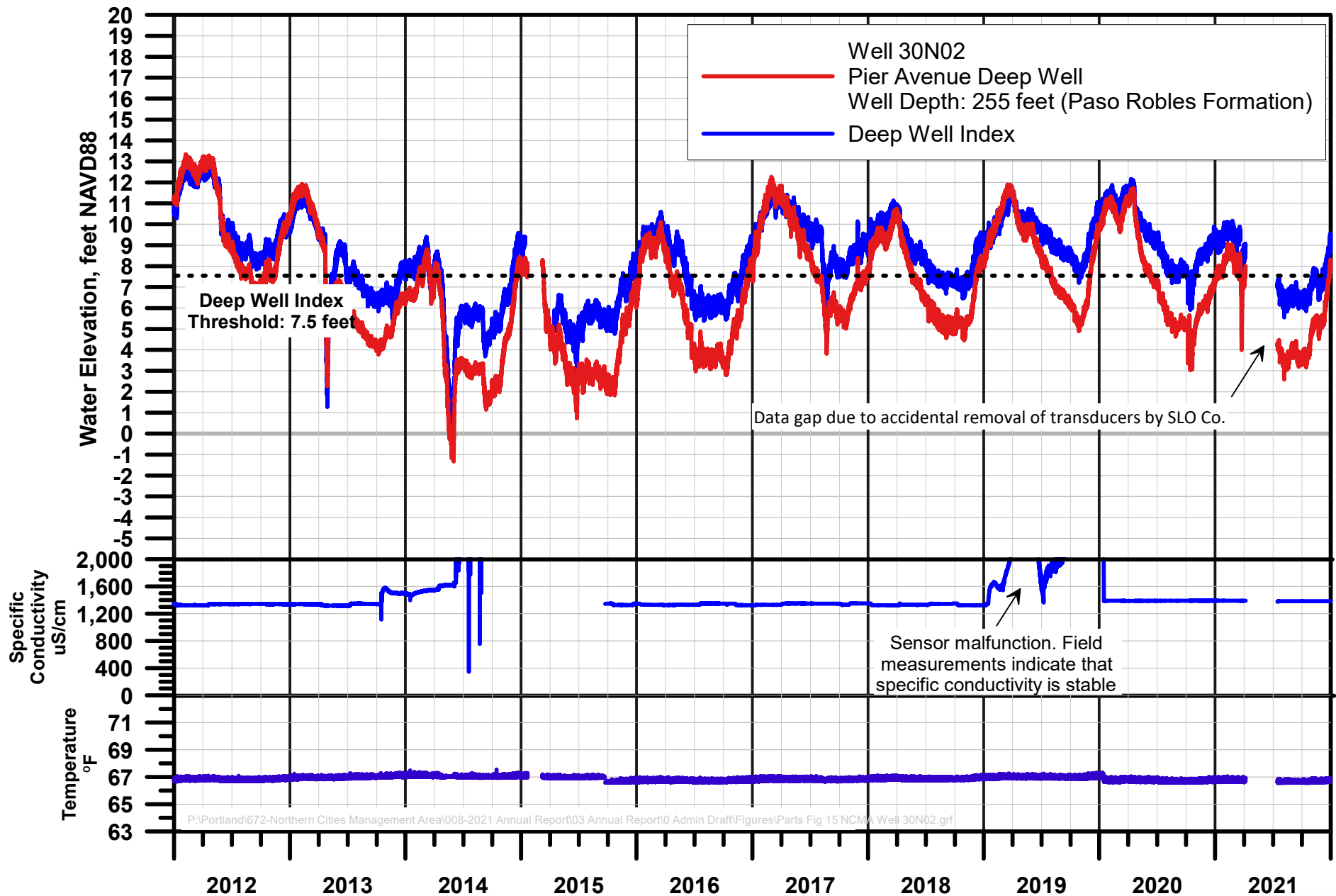
Notes:  
NAVD88 - North American Vertical Datum of 1988  
uS/cm - microsiemens per centimeter



**FIGURE 14. WATER ELEVATION, CONDUCTIVITY, AND TEMPERATURE, WELL 30F03**

Northern Cities Management Area  
 San Luis Obispo County, California

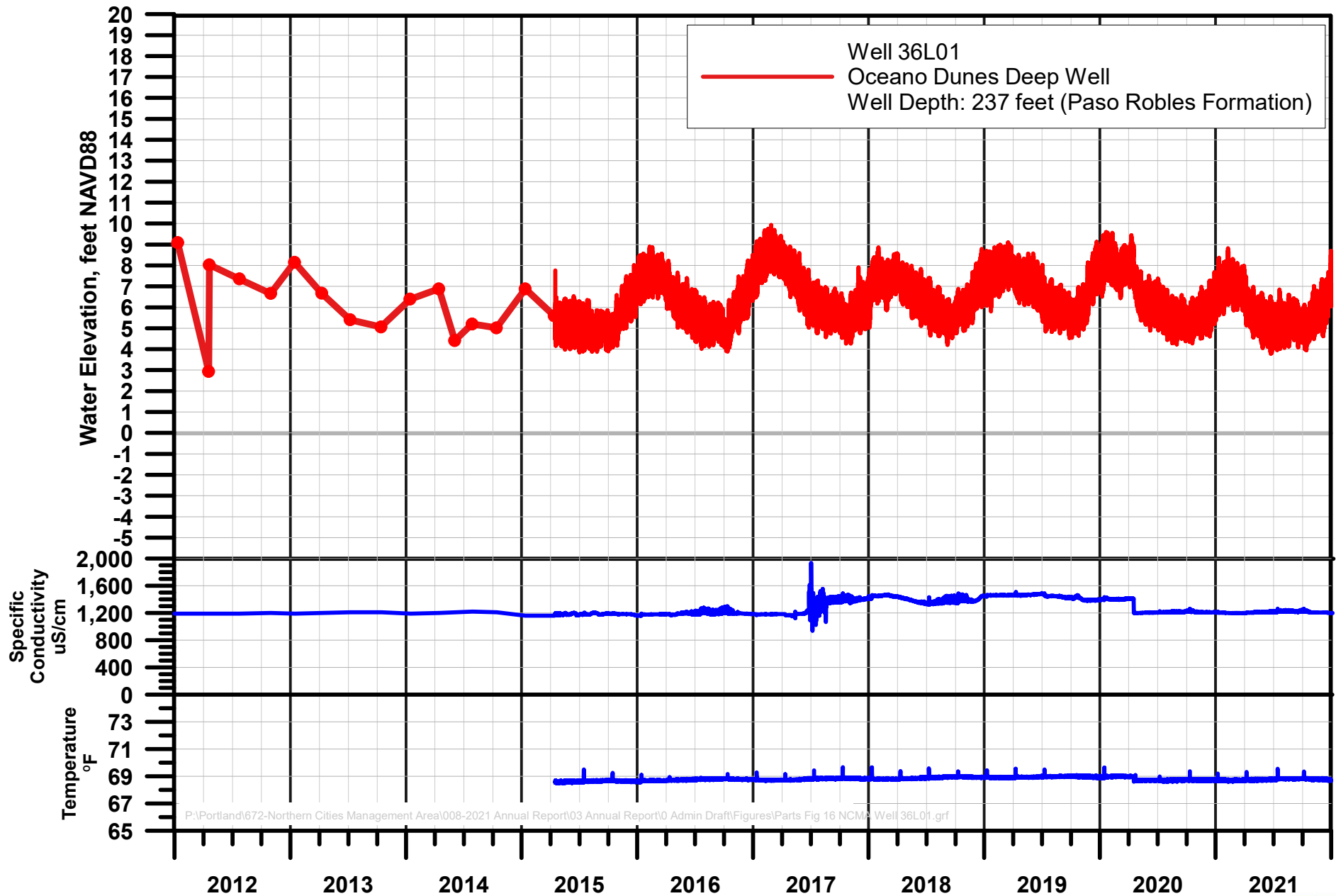
Notes:  
 NAVD88 - North American Vertical Datum of 1988  
 uS/cm - microsiemens per centimeter



**FIGURE 15. WATER ELEVATION, CONDUCTIVITY, AND TEMPERATURE, WELL 30N02**

Northern Cities Management Area  
 San Luis Obispo County, California

Notes:  
 NAVD88 - North American Vertical Datum of 1988  
 uS/cm - microsiemens per centimeter

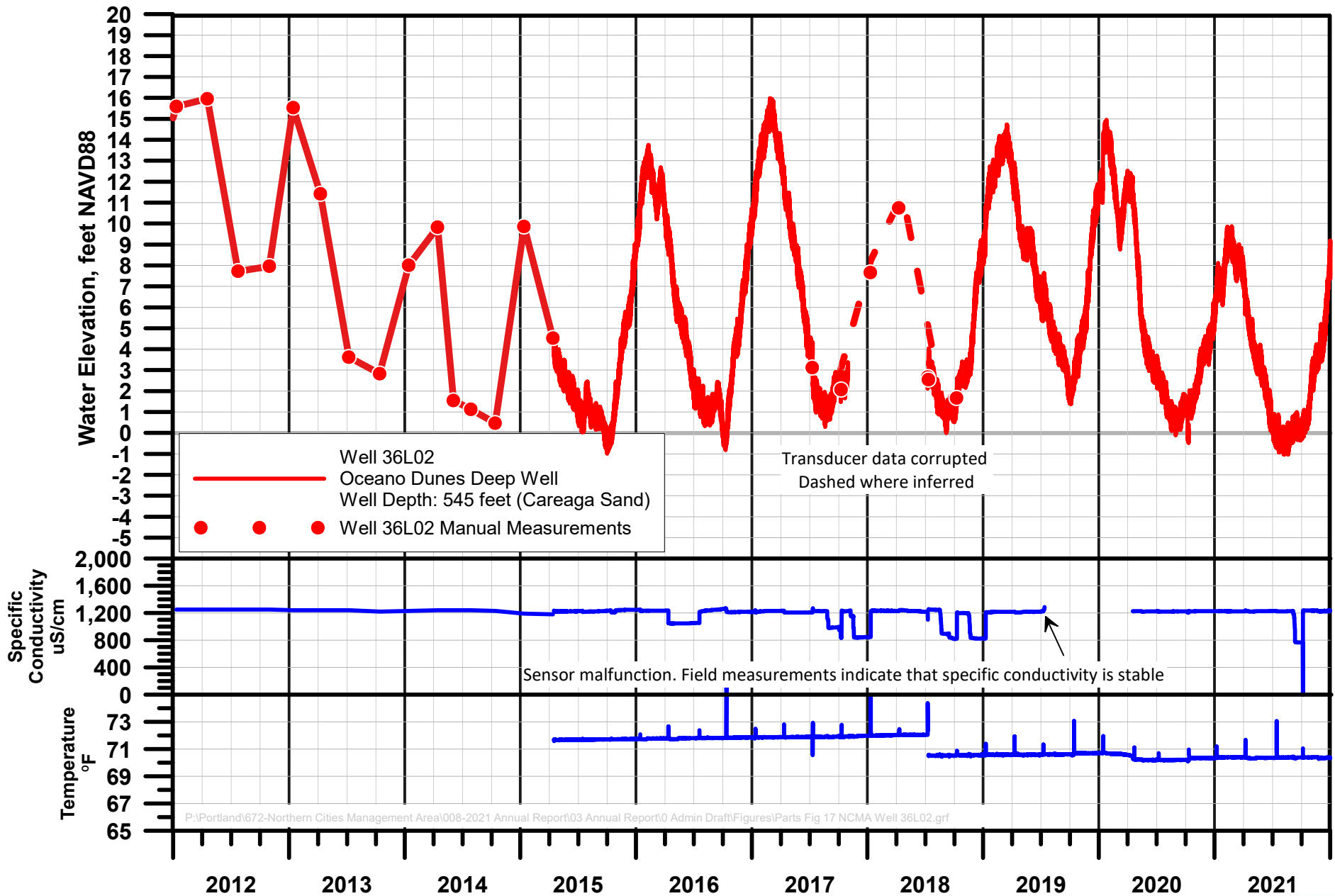


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**FIGURE 16. WATER ELEVATION, CONDUCTIVITY, AND TEMPERATURE, WELL 36L01**

Northern Cities Management Area  
San Luis Obispo County, California

Notes:  
NAVD88 - North American Vertical Datum of 1988  
uS/cm - microsiemens per centimeter

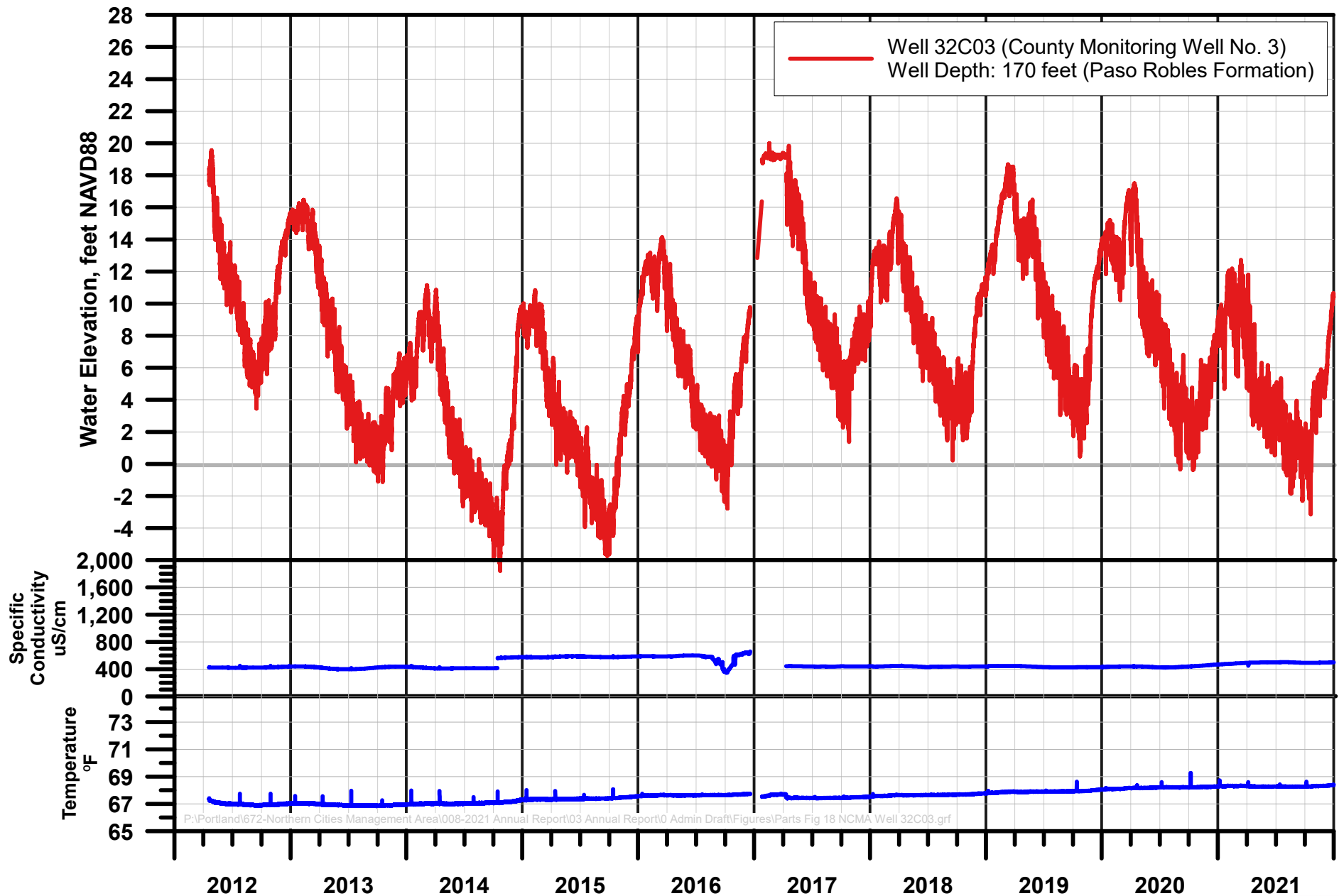


**FIGURE 17. WATER ELEVATION, CONDUCTIVITY, AND TEMPERATURE, WELL 36L02**

Northern Cities Management Area  
San Luis Obispo County, California

Notes:  
NAVD88 - North American Vertical Datum of 1988  
uS/cm - microsiemens per centimeter





**FIGURE 18. WATER ELEVATION, CONDUCTIVITY, AND TEMPERATURE, WELL 32C03**

Northern Cities Management Area  
San Luis Obispo County, California

Notes:  
NAVD88 - North American Vertical Datum of 1988  
uS/cm - microsiemens per centimeter

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## 3.2 Change in Groundwater in Storage

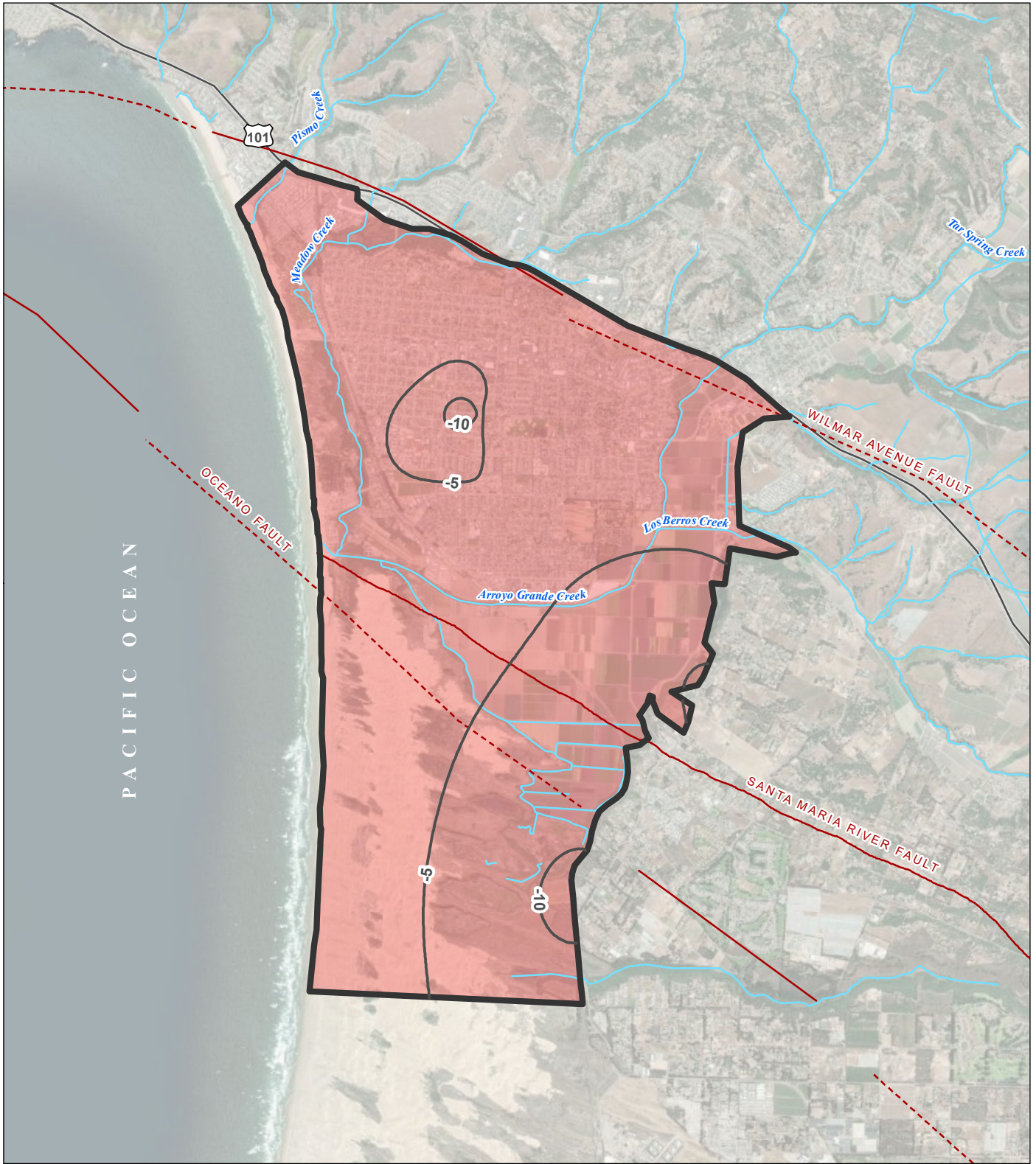
The relative change of groundwater levels and associated change in groundwater in storage in the NCMA portion of the SMGB between April 2020 and April 2021 were estimated using a comparison of water level contour maps created for these periods. Separate estimates of change in groundwater in storage were computed for both the deep aquifer system and for the alluvial aquifer and then summed together to represent the total NCMA estimated change in groundwater in storage. The comparison of the April water levels was chosen to comply with DWR reporting requirements and SGMA.

For each aquifer, the groundwater contour lines from each period were compared and the volumetric difference between the two periods was calculated. The results are presented in **Figure 19**, on page 44, and **Figure 20**, on page 45, which show contours of equal difference between April 2020 and April 2021 water elevations in the deep aquifer system and the alluvial aquifer, respectively. **Figure 19**, on page 44, shows that deep aquifer system water elevations decreased across the NCMA, resulting in a net decrease of groundwater in storage in the deep aquifer. Larger deep aquifer water elevation declines are noted along the southeastern boundary with NMMA and within the area of concentrated municipal pumping on Tri-Cities Mesa. **Figure 20**, on page 45, shows that alluvial aquifer water elevations decreased throughout all but the southern end of the extent of alluvium in the Cienega Valley, resulting in a net decrease of groundwater in storage in the alluvial aquifer.

From the change of water levels maps, a volumetric change in groundwater in storage estimate was made for each aquifer, based on assumed aquifer properties,<sup>18</sup> and then summed to represent the total NCMA estimated change in groundwater in storage. The net changes in groundwater levels in both aquifers represents a net decrease of groundwater in storage from April 2020 to April 2021 of approximately 1,400 AF (compared to a net decrease of 500 AF during the previous year).

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<sup>18</sup> A storage coefficient of 0.02 was used for the deep aquifer system. This is representative of the Paso Robles Formation and Careaga Sand in the area, as documented in the SMGB Characterization Project (Fugro, 2015). A specific yield value for the alluvial aquifer of 0.09 was back-calculated using the 2019 estimated change in alluvial groundwater in storage represented by the calculated agricultural demand (Section 4.2.1) and an alluvial groundwater elevation change map representing the total volume change that occurred between April 2019 and October 2019.



**FIGURE 19**


**Change in Groundwater Elevation, Deep Aquifer System  
April 2020 to April 2021**

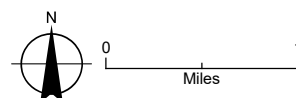
Northern Cities Management Area  
San Luis Obispo County, California

**LEGEND**

-  Contour of Equal Difference in Water Level, feet
-  Area of Net Decline
-  Area of Net Rise
-  Fault (dashed where inferred)
-  Interstate
-  Watercourse

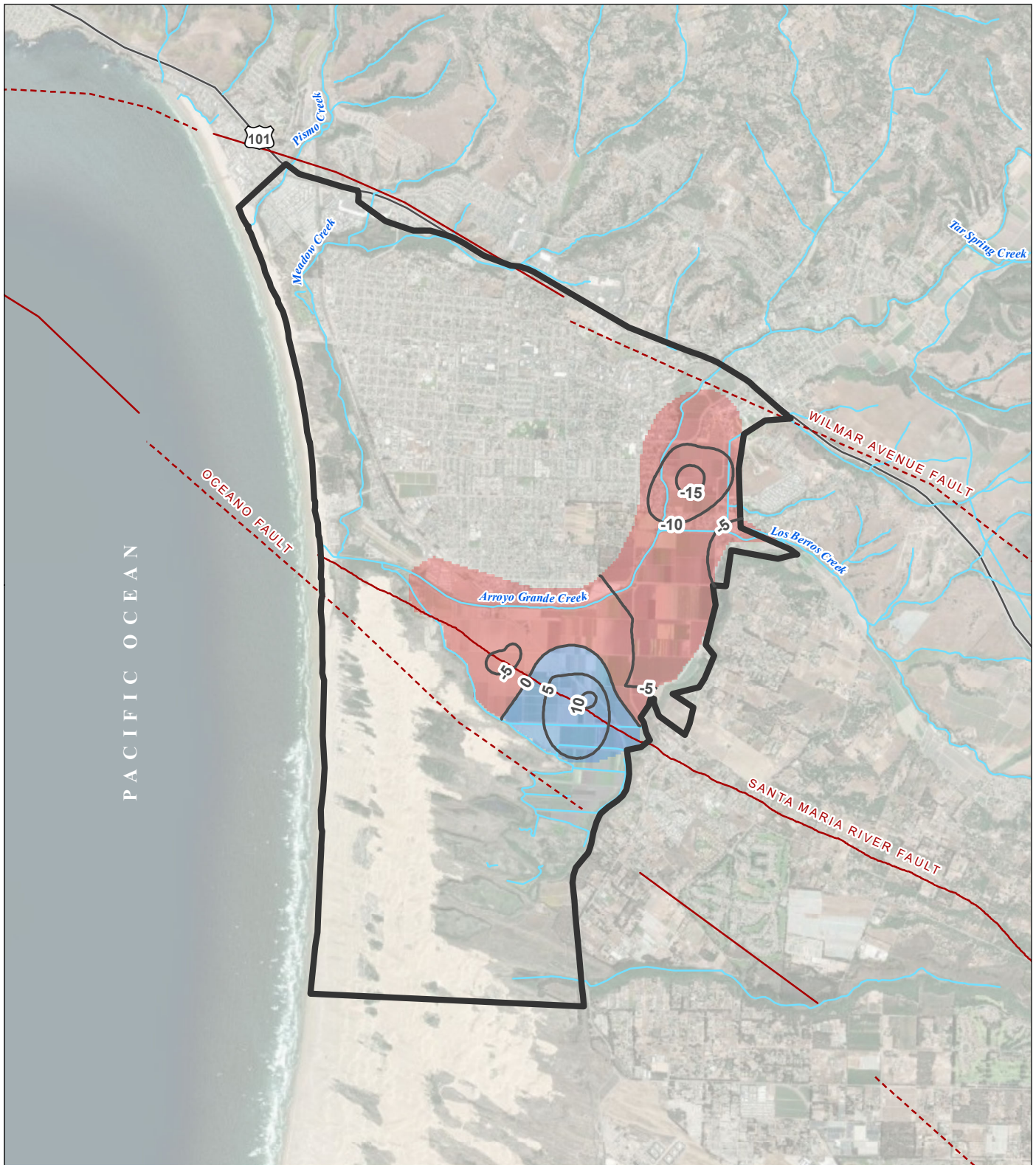
**All Other Features**

-  Northern Cities Management Area



Date: January 25, 2022  
Data Sources: SLO County, USGS, NCGMA and NMMA Agencies,  
California Geological Survey, ESRI, Maxar Imagery (2020)





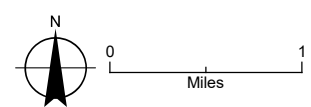
**LEGEND**

Contour of Equal Difference in Water Level, feet	Fault (dashed where inferred)
Area of Net Decline	Interstate
Area of Net Rise	Watercourse

**All Other Features**

Northern Cities Management Area

**FIGURE 20**  
**Change in Groundwater Elevation, Alluvial Aquifer**  
**April 2020 to April 2021**  
 Northern Cities Management Area  
 San Luis Obispo County, California



Date: January 25, 2022  
 Data Sources: SLO County, USGS, NCGMA and NMMA Agencies,  
 California Geological Survey, ESRI, Maxar Imagery (2020)

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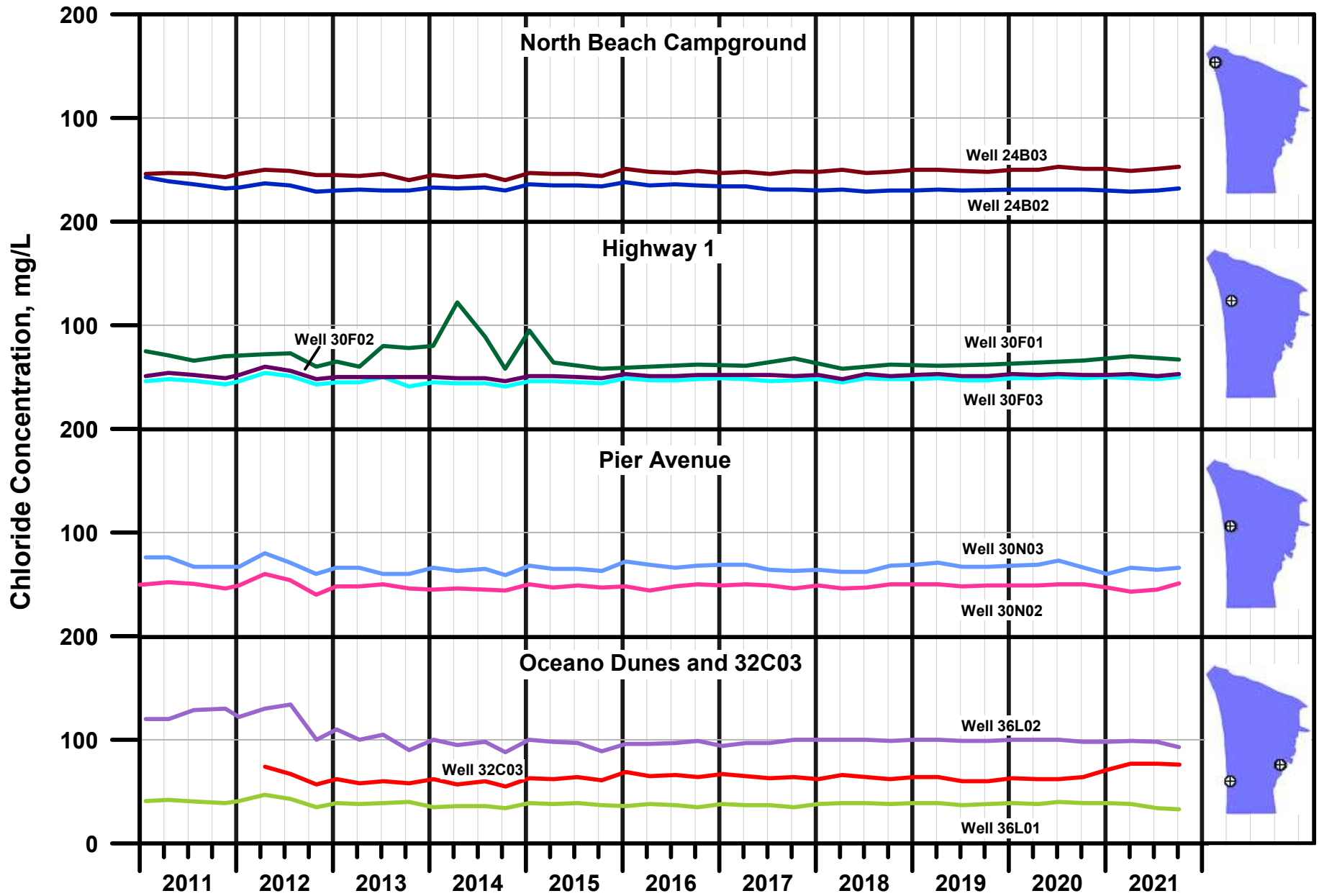
## 3.3 Water Quality

Water is used in several ways in the NCMA, and each use requires a certain minimum water quality. Because contaminants from seawater intrusion or from anthropogenic sources can potentially impact the quality of water in the aquifer, water quality is monitored at each of the sentry well locations in the NCMA and County Monitoring Well No. 3 (32C03).

### 3.3.1 Quarterly Groundwater Monitoring

Quarterly groundwater monitoring events occurred in January, April, July, and October 2021. During each event, depths to groundwater were measured, and wells were sampled using procedures, sampling equipment, and in-field sample preservation protocol pursuant to ASTM International Standard D4448-01. The water quality data from these events and historical data from these wells are provided in Appendix A. Graphs of historical chloride and total dissolved solids (TDS) concentrations over time are presented in **Figure 21**, on page 48, and **Figure 22**, on page 49, respectively, to monitor for trends that may aid in the detection of impending seawater intrusion.

The historical water quality data show that concentration levels of chlorides and TDS, as well as other constituents, have remained relatively stable within a very narrow historical range since 2009. Improved management of municipal groundwater use, due to an overall reduction in pumping since 2009, has likely contributed to the past several years of relatively stable groundwater quality.

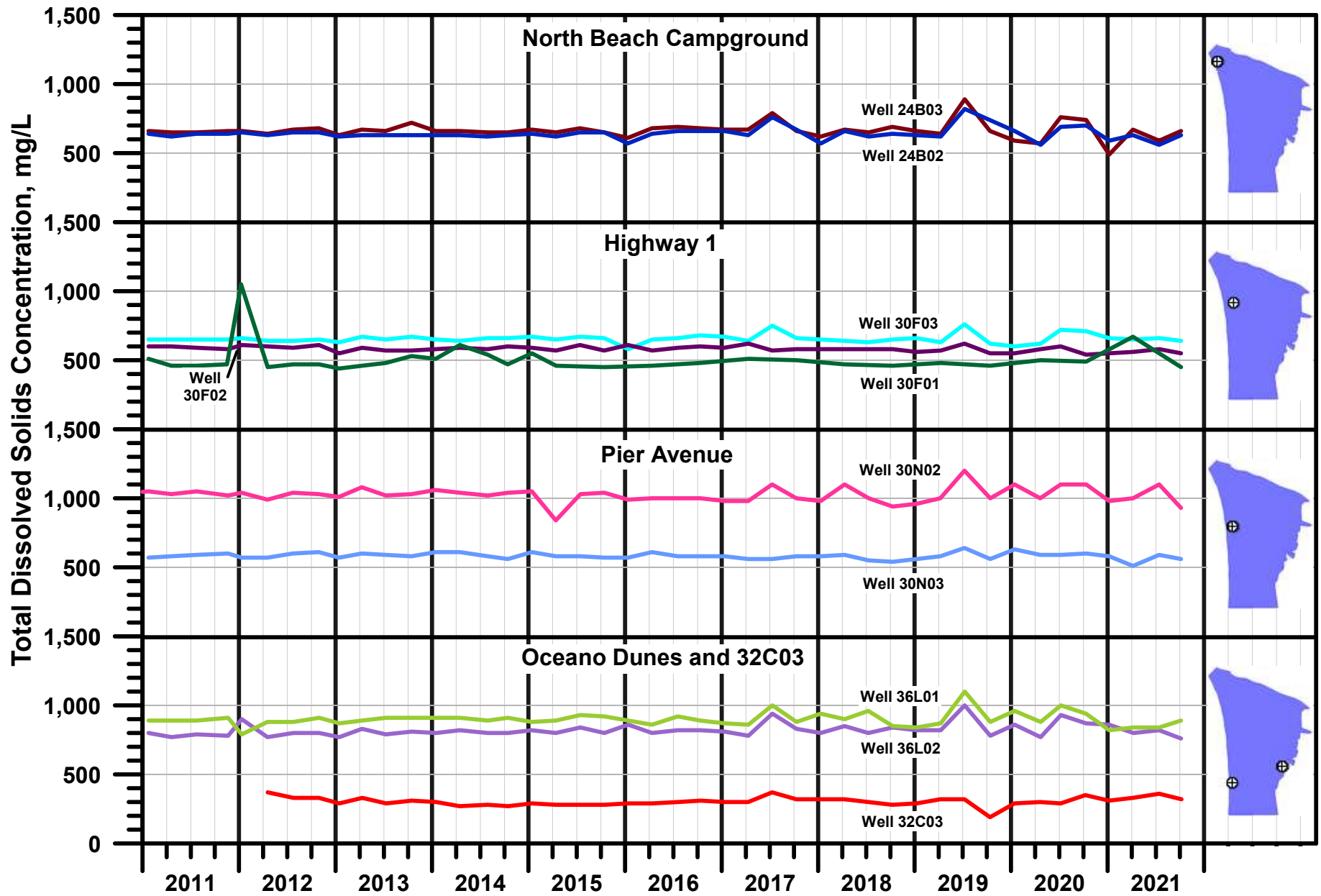


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**FIGURE 21. CHLORIDE CONCENTRATIONS IN MONITORING WELLS**  
Northern Cities Management Area  
San Luis Obispo County, California

Notes:  
mg/L - milligrams per liter





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**FIGURE 22. TOTAL DISSOLVED SOLIDS CONCENTRATIONS IN MONITORING WELLS**  
 Northern Cities Management Area  
 San Luis Obispo County, California

Notes:  
 mg/L - milligrams per liter



### 3.3.2 Analytical Results Summary

Analytical results of key water quality data, including chloride, TDS, and sodium, were generally consistent with historical concentrations and observed ranges of constituent concentrations during 2021. In general, no water quality results were observed that are a cause of concern.

**Figure 23A** through **D**, beginning on page 52, are a set of Piper diagrams, representing groundwater sampling results from each of the quarterly sampling events in 2021. The Piper diagram provides a means of presenting the relative abundance of common ions (cations and anions) of each water quality sample. The relative abundance of common ions in each water quality sample, including cations; sodium, calcium, magnesium, and potassium, and anions; bicarbonate, chloride, and sulfate, determine the ‘water quality type’ of the sample. Examples of different water quality types include ‘calcium-magnesium-sulfate’ type (i.e. 30N02 and 36L01), ‘sodium-chloride’ type (i.e., 32C03), and ‘calcium-bicarbonate’ type (all remaining monitored wells). The Piper diagrams (**Figure 23A–D**, beginning on page 52) show the quarterly 2021 water quality results, which generally fall into these three water quality type groupings. The relative abundance of common ions found in seawater is presented as a red “X” on the Piper diagrams for reference purposes. Well 32C03 generally demonstrates the most similar signature to seawater, however, the total dissolved solids present in 32C03 are more than two orders of magnitude lower than that of seawater<sup>19</sup>. In the event of possible future incipient seawater intrusion, a migration towards the seawater base (red “X”) would be expected for the affected well(s) on the Piper diagram.

Three separate water quality types are found in the monitoring wells:

1. The Pier Avenue deep well (30N02), screened in the Paso Robles Formation from 175 to 255 feet bgs, and Oceano Dunes intermediate well (36L01), screened in the Paso Robles Formation from 227 to 237 feet bgs, are screened in the same production zone. This is despite their different nomenclature as “deep” compared with “intermediate” wells. Relative to the other wells in the area, these two wells are high in sulfates and have calcium-magnesium-sulfate-rich water. Both wells are relatively low in chloride. This is significant because this zone, and well 30N02, was the site of an apparent seawater intrusion event in 2009–2010.
2. The County Monitoring Well No. 3 (32C03), screened from 90 to 170 feet bgs, in the Paso Robles Formation, has an apparent water quality that is different than any of the other wells in the area. It is relatively high in sodium, chloride, and potassium. Its location in the right quadrant of the diamond-shaped part of the Piper diagram (**Figure 23A–D**, beginning on page 52) commonly characterizes a sodium-chloride-rich groundwater representative of marine or deep ancient groundwater, even though it is a relatively shallow well and screened within the Paso Robles Formation, a Plio-Pleistocene-age alluvial deposit.
3. All of the other wells in the monitoring network fall into the third category of groundwater water quality. These wells are all generally a calcium-bicarbonate groundwater that is commonly associated with shallow groundwater. This grouping of water quality represents groundwater from wells that are screened in both the Paso Robles Formation and the Careaga Sand (wells 24B03, 30F03, and 36L02 are screened in the Careaga Sand; the others are screened in the Paso Robles Formation).

None of the water quality results from monitoring wells throughout 2021 indicate an incipient episode or immediate threat of seawater intrusion. There have been no water quality results indicative of seawater

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<sup>19</sup> The concentration of TDS in well 32C03 is generally the lowest out of all 16 monitored wells in NCMA.

intrusion since the decline of TDS, sodium, and chloride concentrations detected in Paso Robles Formation wells 30N02, 30N03, and OCSD MW-Blue following the 2009 – 2010 seasons. No indications of seawater intrusion have been observed in wells screened in the underlying Careaga Sand. At this time, without additional offshore data, the precise location of the interface or mixing zone is not known and will not be known unless and until it intercepts a monitoring well. However, the airborne electromagnetic survey conducted in 2020 (Section 1.7.4) indicates that no seawater intrusion was occurring in the deep aquifer system at the time of the survey, and that the interface generally conformed to the Ghyben-Herzberg ratio<sup>20</sup>

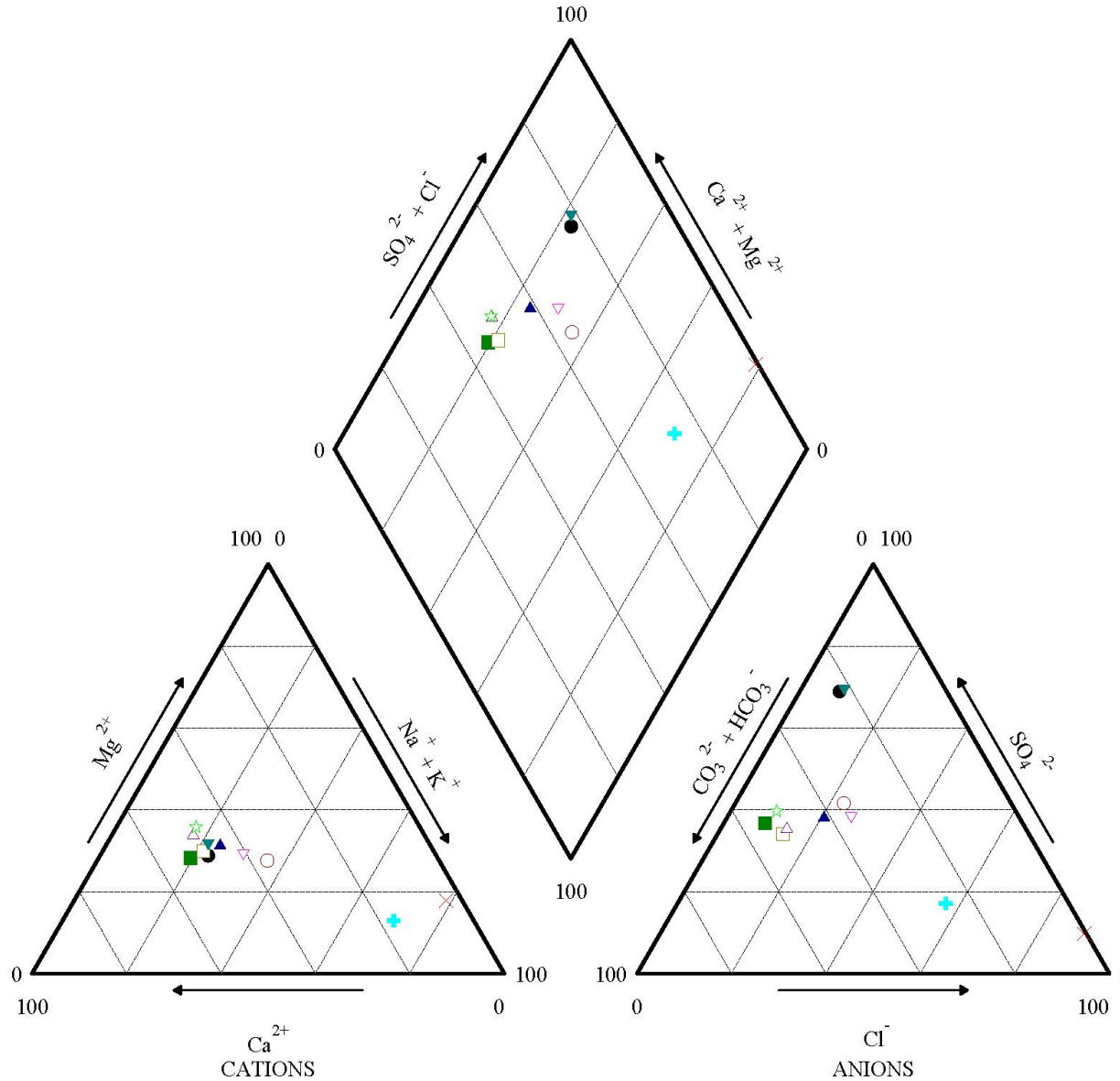
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<sup>20</sup> Under normal conditions, the higher density of saltwater causes it to move into coastal aquifers in a wedge shape under the freshwater. The shape of the saltwater wedge is described by the Ghyben-Herzberg ratio which states that, for every foot of fresh water in an unconfined aquifer above sea level, there will be forty feet of fresh water in the aquifer below sea level (Ploessel, 1982).

### Piper Diagram - NCMA Q1 2021

EXPLANATION

- 24B02
- 24B03
- ▲ 30F02
- △ 30F03
- ▼ 30N02
- ▽ 30N03
- 36L01
- 36L02
- ☆ 31H11
- ⊕ 32C03
- ⊗ Seawater Base



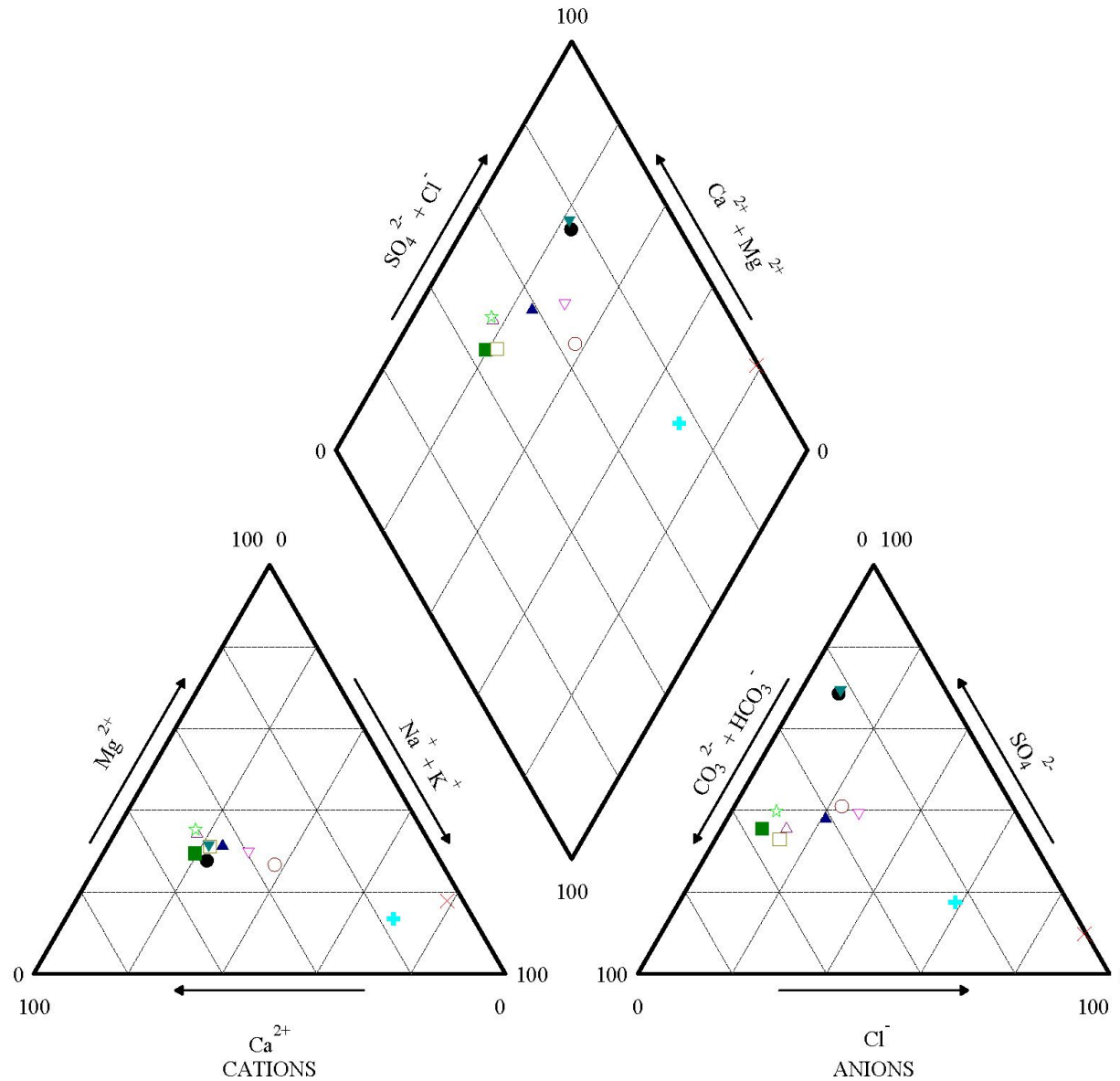
**FIGURE 23A.**  
**PIPER DIAGRAMS OF WATER QUALITY IN SELECT MONITORING WELLS - 2021 Q1 RESULTS**  
 Northern Cities Management Area  
 San Luis Obispo County, California



### Piper Diagram - NCMA Q2 2021

EXPLANATION

- 24B02
- 24B03
- ▲ 30F02
- △ 30F03
- ▼ 30N02
- ▽ 30N03
- 36L01
- 36L02
- ☆ 31H11
- ⊕ 32C03
- × Seawater Base

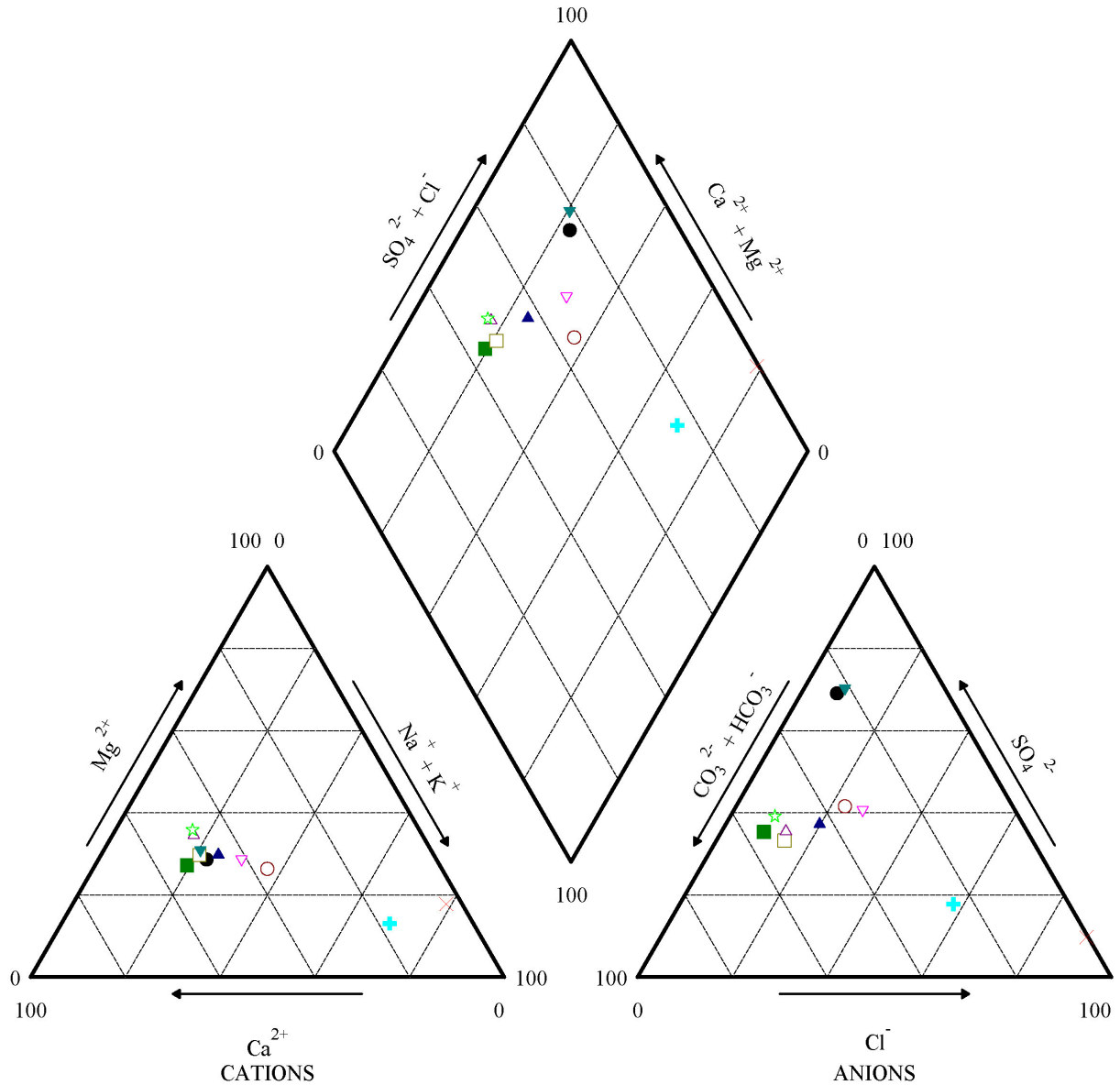


**FIGURE 23B.**  
**PIPER DIAGRAMS OF WATER QUALITY IN SELECT MONITORING WELLS - 2021 Q2 RESULTS**  
 Northern Cities Management Area  
 San Luis Obispo County, California

Piper Diagram - NCMA Q3 2021

EXPLANATION

- 24B02
- 24B03
- ▲ 30F02
- △ 30F03
- ▼ 30N02
- ▽ 30N03
- 36L01
- 36L02
- ☆ 31H11
- ⊕ 32C03
- ⊗ Seawater Base

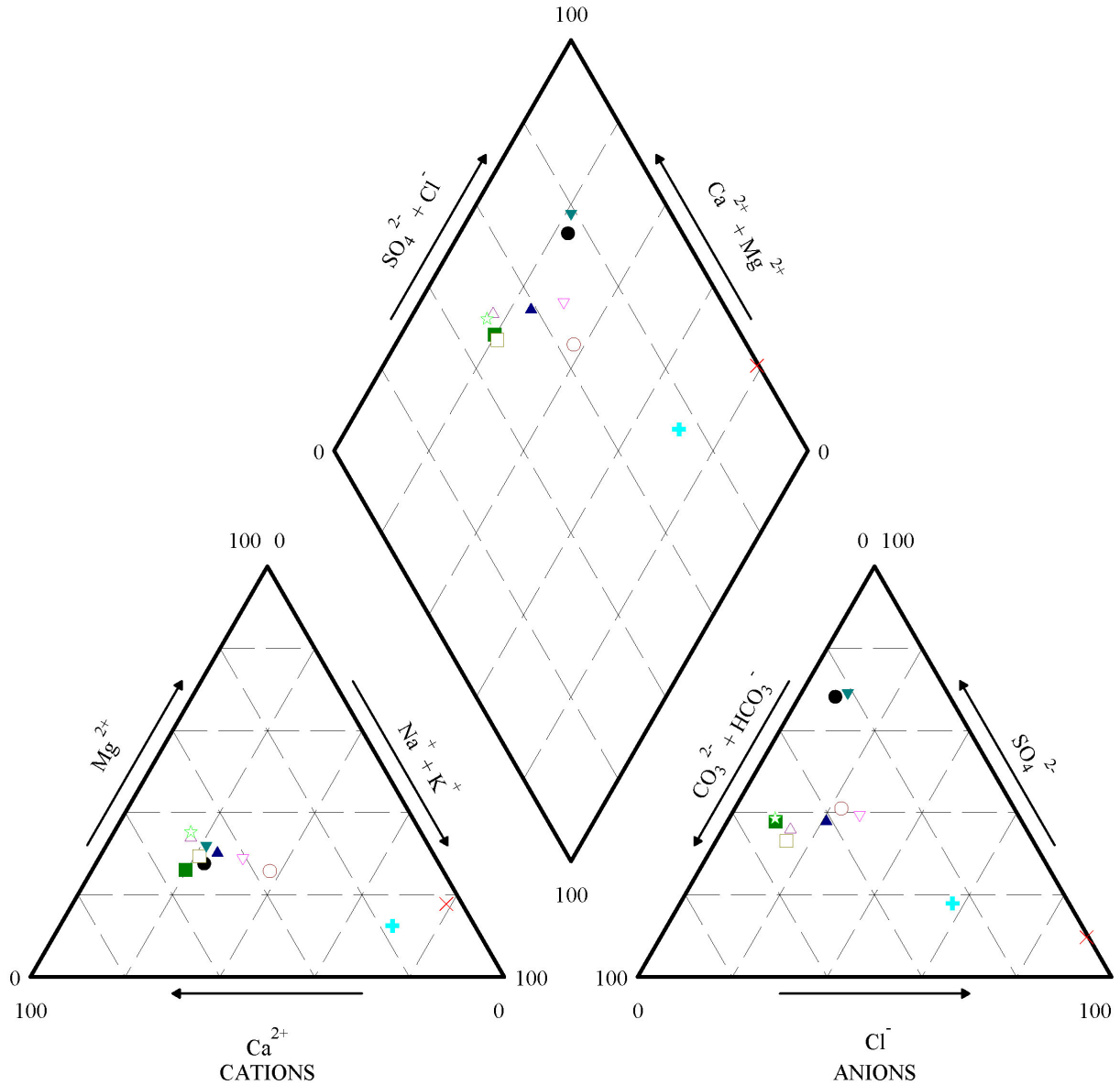


**FIGURE 23C.**  
**PIPER DIAGRAMS OF WATER QUALITY IN SELECT MONITORING WELLS - 2021 Q3 RESULTS**  
 Northern Cities Management Area  
 San Luis Obispo County, California

Piper Diagram - NCMA Q4 2021

EXPLANATION

- 24B02
- 24B03
- ▲ 30F02
- △ 30F03
- ▼ 30N02
- ▽ 30N03
- 36L01
- 36L02
- ☆ 31H11
- ⊕ 32C03
- × Seawater Base



**FIGURE 23D.**  
**PIPER DIAGRAMS OF WATER QUALITY IN SELECT MONITORING WELLS - 2021 Q4 RESULTS**  
 Northern Cities Management Area  
 San Luis Obispo County, California

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## SECTION 4: Water Supply and Production/Delivery

### 4.1 Water Supply

The NCMA water supply consists of three major sources including Lopez Lake, the SWP, and groundwater. Each source of supply has a defined delivery volume that varies from year to year.

#### 4.1.1 Lopez Lake

The Lopez Project consists of Lopez Lake, Lopez Dam, Lopez Terminal Reservoir, and Lopez Water Treatment Plant and is operated by SLOFCWCD Zone 3. SLOFCWCD Zone 3 provides treated water directly to the Zone 3 contractors and releases water to Arroyo Grande Creek for habitat conservation and agricultural use. The Zone 3 contractors include Arroyo Grande, Grover Beach, Pismo Beach, Oceano CSD, and CSA 12, which serves Avila Beach and is not in the NCMA.

The operational safe yield of Lopez Lake is 8,730 acre-feet per year (AFY), which reflects the amount of sustainable water supply during a drought of defined severity. Of this, 4,530 AFY is apportioned to the contractors and 4,200 AFY is reserved for downstream releases to maintain flows in Arroyo Grande Creek and provide groundwater recharge. The 2021 SLOFCWCD Zone 3 allocations are shown in **Table 2**.

**Table 2. Lopez Lake (SLOFCWCD Zone 3 Contractors) Water Allocations (AFY)**

Contractor	Normal Water Allocation, (AFY)
City of Arroyo Grande	2,290
City of Grover Beach	800
City of Pismo Beach	892
Oceano CSD	303
CSA 12 (not in NCMA)	245
Total	4,530
Downstream Releases	4,200
Safe Yield of Lopez Lake	8,730

**Notes**

AFY = acre-feet per year, CSA = County Service Area CSD = Community Services District  
SLOFCWCD = County of San Luis Obispo Flood Control & Water Conservation District  
NCMA = Northern Cities Management Area

In December 2014, SLOFCWCD Zone 3 adopted the Low Reservoir Response Plan (LRRP). The LRRP establishes actions that SLOFCWCD Zone 3 can take when the amount of water in storage in the reservoir drops below 20,000 AF, provided that the SLOFCWCD Board of Supervisors declares a drought emergency. The purpose of the LRRP is to limit downstream releases and municipal diversions from Lopez Lake to preserve water within the reservoir, above the minimum pool, for a minimum of 3 to 4 years under drought conditions.

The reduction strategies for the LRRP are tied to the amount of water in the reservoir. As the amount of water in the reservoir drops below the triggers (20,000; 15,000; 10,000; 5,000; and 4,000 AF), the hydrologic



conditions are reviewed, and adaptive management is used to meet the LRRP objectives. The municipal diversions are to be reduced according to the strategies shown in **Table 3**.

**Table 3. Lopez Lake Municipal Diversion LRRP Reduction Strategy**

Amount of Water in Storage (AF)	Municipal Diversion	
	Reduction	AFY
20,000	0%	4,530
15,000	10%	4,077
10,000	20%	3,624
5,000	35%	2,941
4,000	100%	0

**Notes**

AF= acre-feet, AFY = acre-feet per year

The initial prescribed actions after the LRRP is enacted include (1) reductions in entitlement water deliveries; (2) reductions in downstream releases; (3) no new allocations of surplus water from unreleased downstream releases; and (4) extension of time that agencies can take delivery of existing unused water throughout the duration of the drought emergency, subject to evaporation losses if the water is not used in the year of original allocation. Included in the LRRP is an adaptive management provision that allows the initial prescribed actions to be modified and adapted to the specific drought conditions.

The initial prescribed actions with respect to downstream releases are that they should be reduced according to the strategies described in **Table 4**. The release strategies represent the maximum amount of water that can be released. The SLOFCWCD Zone 3 controls the timing of the reduced releases to meet the needs of the agricultural stakeholders and to address environmental requirements.

**Table 4. Lopez Lake Downstream Release LRRP Reduction Strategy**

Amount of Water in Storage (AF)	Downstream Release	
	Reduction	AFY
20,000	9.5%	3,800
15,000	9.5%	3,800
10,000	75.6%	1,026
5,000	92.9%	300
4,000	100%	0

**Notes**

AF= acre-feet, AFY = acre-feet per year

The LRRP was put into effect on April 1, 2015. Throughout 2015 and all of 2016, SLOFCWCD Zone 3 operated Lopez Lake pursuant to the 15,000 AF diversion reduction trigger that required a 10 percent reduction in municipal diversions. The 10,000 AF trigger requiring a 20 percent reduction was avoided because agencies enacted mandatory water conservation measures and utilized other sources of water including some minimal rainfall and SWP water. Lopez Lake recovered from a low of 11,000 AF in storage to a peak of more than 30,000 AF in May 2017, ending with approximately 25,000 AF at the start of 2018 because of the relatively

heavy rainfall year of late 2016 and early 2017. Although contractually the LRRP is no longer in effect when both triggers are rescinded (i.e., the Board of Supervisors declaration of water emergency and reduction of reservoir levels to below 20,000 AF), the SLOFCWCD Zone 3 agencies resolved to keep the LRRP in effect. Because the reservoir volume was above 20,000 AF, no mandatory reductions in municipal deliveries were required in 2017, 2018, or 2019. In 2020, the reservoir storage level stayed above 20,000 AF until December, when it reached a level of 19,826 AF. The LRRP was not activated during 2020.

In 2021, the high reservoir storage level occurred in January, at 19,874 AF. The reservoir storage level declined throughout most of 2021, reaching a low point of 14,174 AF in November. With the declining reservoir storage approaching the 15,000 AF trigger level, the Board of Supervisors voted on August 24, 2021, to enact the LRRP and the initial prescribed action of a 10% municipal entitlement reductions (retroactive to April 2021) was put in place. Although the reservoir level recovered slightly in December 2021, to 14,905 AF, the LRRP 15,000 AF trigger level entitlement reductions remain in effect.

The total deliveries from Lopez Lake in 2021 was 6,586 AF, of which 3,522 AF were delivered to NCMA contractors, 72 AF were delivered to CSA 12, and 2,992 AF were released downstream to maintain flow in Arroyo Grande Creek (Table 5).

When management of releases results in a portion of the 4,200 AFY remaining in the reservoir, or the contractors do not use their full entitlement for the year, the water is offered to the contractors as surplus water. Surplus water deliveries to the NCMA agencies in 2021 equaled 426 AF (Table 5).

**Table 5. Lopez Lake Deliveries, 2021**

Contractor	2021 Allocation Delivery (AF)	2021 Surplus Delivery (AF)	2021 Total Lopez Lake Water Delivery (AF)
Arroyo Grande	2,158	0	2,158
Grover Beach	795	0	795
Pismo Beach	143	263	406
Oceano CSD	0	163	163
<b>Total NCMA 2021 Delivery</b>	<b>3,096</b>	<b>426</b>	<b>3,522</b>
CSA 12 (not in NCMA)	72	0	72
Downstream Releases	2,992	–	2,992
<b>Total 2021 Lopez Lake Deliveries</b>	<b>6,160</b>	<b>426</b>	<b>6,586</b>

**Notes**

AF= acre-feet      CSD = Community Services District      NCMA = Northern Cities Management Area  
Source: SLOFCWCD Zone 3 Monthly Operations Reports

### 4.1.2 State Water Project

Pismo Beach and OCSD have contracts with SLOFCWCD Zone 3 to receive water from the SWP. The SLOFCWCD serves as the SWP contractor and provides imported water to local retailers through the SWP Coastal Branch (Coastal Branch) pipeline. Pismo Beach and OCSD, as subcontractors to SLOFCWCD, have annual contractual

water delivery allocations, commonly referred to as Table A water, of 1,240 <sup>21</sup> AFY and 750 AFY, respectively (Table 6). In addition to its Table A allocation, Pismo Beach holds 1,240 AFY of additional allocation known as “drought buffer” and OCSD holds an additional allocation of 750 AFY of drought buffer. The additional drought buffer allocation held by the agencies is available to augment the SWP water supply when the SWP annual allocation, i.e., percentage of SWP water available, is less than 100 percent. The additional allocations also increase each agency’s water held in storage. In any given year; however, the SWP contracts held by Pismo Beach and OCSD are only guaranteed for up to 1,240 AF and 750 AF, respectively <sup>22</sup>.

**Table 6. NCMA SWP Deliveries, 2021**

Agency	Table A Allocation, AFY	Drought Buffer, AFY	2021 Delivery, AF
City of Arroyo Grande	--	--	--
City of Grover Beach	--	--	--
City of Pismo Beach <sup>1</sup>	1,140	1,240	1,302 <sup>2</sup>
Oceano CSD	750	750	470
<b>Total Allocation/Usage, AFY</b>	<b>1,890</b>	<b>1,990</b>	<b>1,772</b>

**Notes**

<sup>1</sup> Pismo Beach contracts for 1,240 AF of Table A water from the SWP, but 100 AF are owned by private parties.

<sup>2</sup> If excess water is available and there is capacity in the pipeline the SWP contract between SLOFCWCD Zone 3 and Pismo Beach does not prevent annual deliveries in excess of 1,240 AF (personal communication with David Spiegel, SLOFCWCD, on February 3, 2022).

AF=acre feet      AFY= acre-feet per year      CSD = Community Services District  
NCMA = Northern Cities Management Area

The SWP annual allocation for all contractors throughout California (including SLOFCWCD, Pismo Beach and Oceano CSD) for 2021 was initially set on December 1, 2020, at 10 percent of the Table A contractual allocation. The 2021 SWP allocation was then decreased to 5 percent on March 23, 2021. SWP contractors can store undelivered Table A water at the SWP facility in San Luis Reservoir (limitations exist on the amount that can be stored in any one year). This stored water is called “carryover water” and can be delivered in subsequent years, but total annual deliveries cannot exceed their Table A allocation due to capacity restrictions in the Coastal Branch. In addition, carryover water can be lost (or “spilled”) if its storage interferes with storage of current-year SWP water for project needs.

For 2022, the initial allocation of the SWP contractors was set at 0 percent of Table A contractual allocation amounts on December 1, 2021<sup>23</sup>. However, on January 20, 2022 the SWP allocation was increased to 15 percent, following above average precipitation in December 2021.

<sup>21</sup> 100 AF of which is owned by a private party.

<sup>22</sup> If excess water is available and there is capacity in the pipeline the SWP contracts between SLOFCWCD Zone 3 and Pismo Beach or OCSD do not prevent annual deliveries in excess of 1,240 AF or 750 AF, respectively (personal communication with David Spiegel, SLOFCWCD, on February 3, 2022).

<sup>23</sup> According to DWR’s December 1, 2021 notice to SWP contractors: “Due to persistent dry conditions over the last several years coupled with the elevated risk of continuing drought conditions, the Department of Water Resources (DWR) will be

The SWP supply has the potential to be affected by drought and environmental issues, particularly because of the endangered Delta smelt in the Sacramento-San Joaquin Delta (Delta). However, OCSD and Pismo Beach as well as the other SLOFCWCD subcontractors have not been negatively affected to date by reduced SWP supplies because of the SLOFCWCD's large amount of unsubscribed Table A allocation which has been used to fulfill subcontractors' requests, even in dry years. Therefore, even when SWP supplies are decreased, the SLOFCWCD's unsubscribed allocation and any carryover water in San Luis Reservoir provides a buffer so that contracted volumes to subcontractors such as OCSD and Pismo Beach may still be provided in full. During 2021, Pismo Beach took delivery of 1,302 AF<sup>22</sup> of SWP water and OCSD took delivery of 470 AF of SWP water.

### 4.1.3 Groundwater

The 2008 Judgment and the 2002 Settlement Agreement govern the use of groundwater in the NCMA and establish that groundwater will continue to be allotted and independently managed by the NCMA agencies, NCMA overlying owners, and SLOFCWCD (collectively known as the Northern Parties). Each of the NCMA agencies has the capability to extract groundwater from municipal water supply wells located in the central and northern portions of the NCMA (**Figure 24**, on page 62). Groundwater also satisfies agricultural irrigation and rural domestic use throughout the NCMA.

The calculated, consensus safe yield value of 9,500 AFY for the NCMA portion of the SMGB was included in the 2002 Settlement Agreement through affirmation of the 2002 Groundwater Management Agreement among the NCMA agencies. The basis of the safe yield was established in 1982 by a Technical Advisory Committee, consisting of representatives from Arroyo Grande, Grover Beach, Pismo Beach, OCSD, Avila Beach Community Water District, Port San Luis Harbor District, the Farm Bureau, and the County to deal with a safe yield allocation strategy and agreement not to exceed the safe yield of what was then called the Arroyo Grande Groundwater Basin. The basis for the committee's analysis was DWR (1979). The Technical Advisory Committee concluded that the safe yield was 9,500 AFY. These findings and the allocation of the safe yield were incorporated into a groundwater management plan (1983 Gentlemen's Agreement and 2002 Groundwater Management Agreement) and further formalized in the 2002 Settlement Agreement and the 2005 Stipulation.

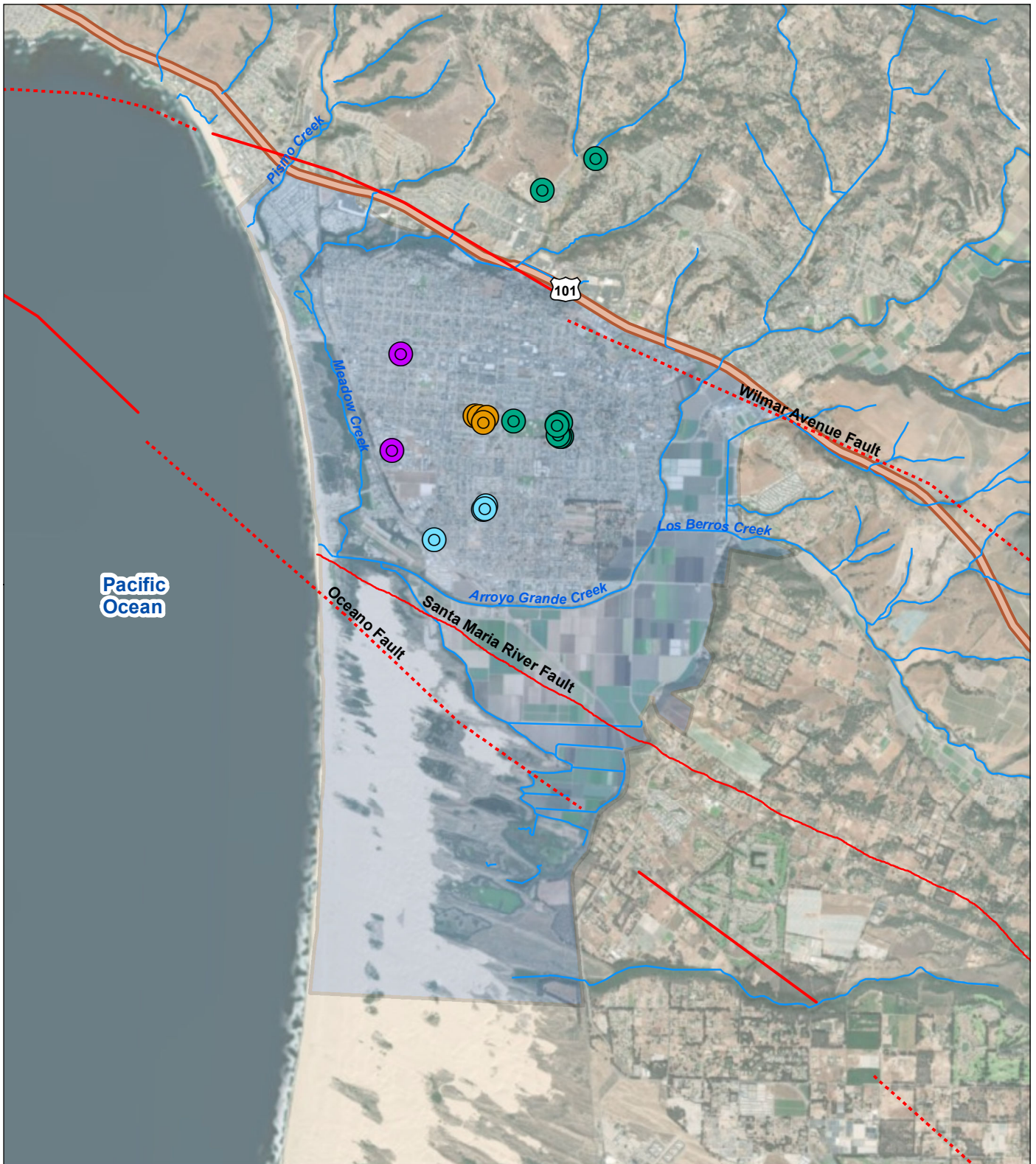
The 9,500 AFY safe yield provides allotments for agricultural irrigation of 5,300 AFY, subsurface outflow to the ocean of 200 AFY, and urban use entitlement of 4,000 AFY. The volume of the entitlement for urban use was subdivided as follows:

- Arroyo Grande: 1,202 AFY
- Grover Beach: 1,198 AFY
- Pismo Beach: 700 AFY
- OCSD: 900 AFY


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*allocating the initial 2022 State Water Project (SWP) available supplies on a basis that ensures the SWP long-term water supply contractors (Contractors) can meet their outstanding minimum human health and safety demands for water (health and safety allocation). Pursuant to Article 18(a) of the long-term water supply contract between DWR and each of the SWP Contractors, the initial 2022 SWP allocation will be based on minimum unmet water demands to meet domestic supply, fire protection, and sanitation needs (referred to herein as "health and safety" needs) during the year. **These health and safety needs are determined to be not more than 55 gallons per capita per day (gpcd)**, consistent with the recent State Water Resources Control Board (SWRCB) emergency curtailment regulations."*





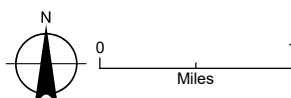
**LEGEND**

-  City of Arroyo Grande Well
-  City of Grover Beach Well
-  City of Pismo Beach Well
-  Oceano Community Services District Well
-  Northern Cities Management Area
-  Faults
-  Streams

**FIGURE 24**

**Locations of Municipal Production Wells**

Northern Cities Management Area  
San Luis Obispo County, California



Date: February 26, 2020  
Data Sources:

Document Path: Y:\\_nonGIS\0672\_Northern\_Cities\_Management\_Area\Source\_Figures\006\_2019\_Annual\_Report\Annual\_Report\Figure24\_Locations of Municipal Production Well.mxd



The safe yield allotment for agricultural irrigation is significantly higher than the actual historical agricultural irrigation demand and the calculated amount for subsurface outflow is unreasonably low. Todd (2007) recognized that maintaining sufficient subsurface outflow to the coast and preservation of a westward groundwater gradient is essential to preventing seawater intrusion. A regional outflow of 3,000 AFY was estimated as a reasonable approximation (Todd, 2007) although the minimum subsurface outflow necessary to prevent seawater intrusion is unknown. The Phase 1C model (see Section 1.7.3) may be utilized in the future to further evaluate regional subsurface outflow to the ocean.

The 2001 Groundwater Management Agreement provides that groundwater entitlements of each of the urban agencies can be increased when land within the corporate boundaries is converted from agricultural use to urban use, which is referred to as an agricultural conversion credit. Agricultural conversion credits equal to 121 AFY and 209 AFY were developed in 2011 for Arroyo Grande and Grover Beach, respectively. These agricultural credits were unchanged during 2021.

Total groundwater production in the NCMA, including agricultural irrigation and rural uses, is shown in **Table 7** (descriptions of agricultural irrigation applied water and rural use estimation are provided in Sections 4.2.1 and 4.2.2, respectively). The total estimated groundwater pumpage in 2021 from the NCMA portion of the SMGB was 3,344 AF

**Table 7. NCMA Groundwater Entitlement and Production from Santa Maria Groundwater Basin, 2021**

Total Entitlement/Use	Groundwater Entitlement + Ag Conversion Credit (AF)	2021 Groundwater Use from SMGB (AF)
Total Urban Groundwater Entitlement /Use	4,000 + 330 = 4,330	759
Total NCMA Groundwater Entitlement /Use	9,500	3,344

**Notes**

AF= acre-feet      Ag = agriculture      SMGB = Santa Maria Groundwater Basin      CSD = Community Services District

#### 4.1.4 Developed Water

The 2005 Stipulation states that “developed water” is “groundwater derived from human intervention” and states that this includes infiltration from the following sources: “Lopez Lake water, return flow, and recharge resulting from storm water percolation ponds.” Return flow results from deep percolation of water used in irrigation that is more than the requirement of the plant. Return flows have not been estimated recently but would be considered part of the groundwater basin inflow.

In 2008, Arroyo Grande, Grover Beach, and Pismo Beach prepared stormwater management plans. To control stormwater runoff and to increase groundwater recharge, each city now requires that new development construct onsite retention or detention ponds. As these new ponds or basins are constructed, the increase in groundwater recharge could result in recognition of substantial augmentation of basin yield and provision of recharge credits to one or more of the NCMA agencies (Todd, 2007). Thus, a re-evaluation of estimated stormwater recharge is warranted as new recharge facilities are installed and as additional information on flow rates, pond size, infiltration rates, and tributary watershed area becomes available.



### 4.1.5 Other Supplies

Arroyo Grande owns three water wells that are located outside the SMGB and pump groundwater from the Pismo Formation. Two of the wells are pumped by the City and used for municipal consumption; the third well is likely to be used in the future. There is no established allocation that limits the volume of groundwater that Arroyo Grande can pump from these wells, but for planning purposes the City assumes that they can pump up to 160 AFY for municipal use. The volume that Arroyo Grande pumps from these wells varies from year to year and is included in summary totals for urban water use, but the volume is not included in the summary totals for SMGB production.

### 4.1.6 Total Water Supply Availability

The baseline, or full allocation, water supply available to the NCMA agencies is summarized in **Table 8**. The baseline water supplies include 100 percent Lopez Lake allocation, SMGB groundwater entitlements, agricultural credits, and 100 percent delivery of SWP allocations. This baseline water supply does not include Lopez Lake surplus or SWP carryover, because these supplies vary from year to year and are not always available. The category “Other Supplies” includes groundwater pumped from outside the NCMA boundaries (outside the SMGB). The baseline supply for the NCMA agencies totals 10,665 AFY.

**Table 8. Baseline (Full Entitlement) Available Urban Water Supplies (AFY)**

Agency	Lopez Lake	SWP Allocation (at 100%)	Groundwater Entitlement	Ag Credit	Other Supplies	Total
City of Arroyo Grande	2,290	0	1,202	121	160	3,773
City of Grover Beach	800	0	1,198	209	0	2,207
City of Pismo Beach	892	1,140	700	0	0	2,732
Oceano CSD	303	750	900	0	0	1,953
<b>Total</b>	<b>4,285</b>	<b>1,890</b>	<b>4,000</b>	<b>330</b>	<b>160</b>	<b>10,665</b>

**Notes**

AFY= acre-feet per year      Ag = agriculture      CSD = Community Services District      SWP = State Water Project

**Table 9** summarizes the available water supply to the NCMA agencies in 2021, including Lopez Lake, Lopez Lake carryover (surplus) water, the 2021 SWP 5 percent Table A delivery schedule, and the available SWP carryover water. The total available water supply is a compilation of all components of each agency’s portfolio.

**Table 9. Available Urban Water Supply, 2021**

Agency	Lopez Lake Allocation	Lopez Lake Surplus	2021 SWP Allocation with Drought Buffer (at 20% Delivery)	2021 SWP Carryover	Groundwater Entitlement	Ag Credit	Other Supplies	Total, 2021
Arroyo Grande	2,290	807	0	0	1,202	121	160	4,580
Grover Beach	800	282	0	0	1,198	209	0	2,489
Pismo Beach	892	314	119 <sup>1</sup>	1,059 <sup>2</sup>	700	0	0	3,084 <sup>1</sup>
Oceano CSD	303	107	75 <sup>1</sup>	990 <sup>2</sup>	900	0	0	2,060 <sup>1</sup>
<b>Total</b>	<b>4,285</b>	<b>1,510</b>	<b>194</b>	<b>2,049</b>	<b>4,000</b>	<b>330</b>	<b>160</b>	<b>12,213</b>

**Notes**

All units in acre-feet (AF)

<sup>1</sup> In years when the Table A SWP allocation, plus drought buffer, plus carryover exceed 1,240 AF for Pismo Beach and 750 AF for OCSD, the total contract guaranteed SWP supply is capped at 1,240 AF for Pismo Beach and 750 AF for OCSD. However, if excess water is available and there is capacity in the pipeline the SWP contracts between SLOFCWCD Zone 3 and each Agency do not prevent annual deliveries in excess of these cap volumes (personal communication with David Spiegel, SLOFCWCD, on February 3, 2022).

<sup>2</sup> Based on personal communication with Wes Thomson, SLOFCWCD, on January 4, 2022.

AF = acre-feet      CSD = Community Services District      SWP = State Water Project

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## 4.2 Water Use

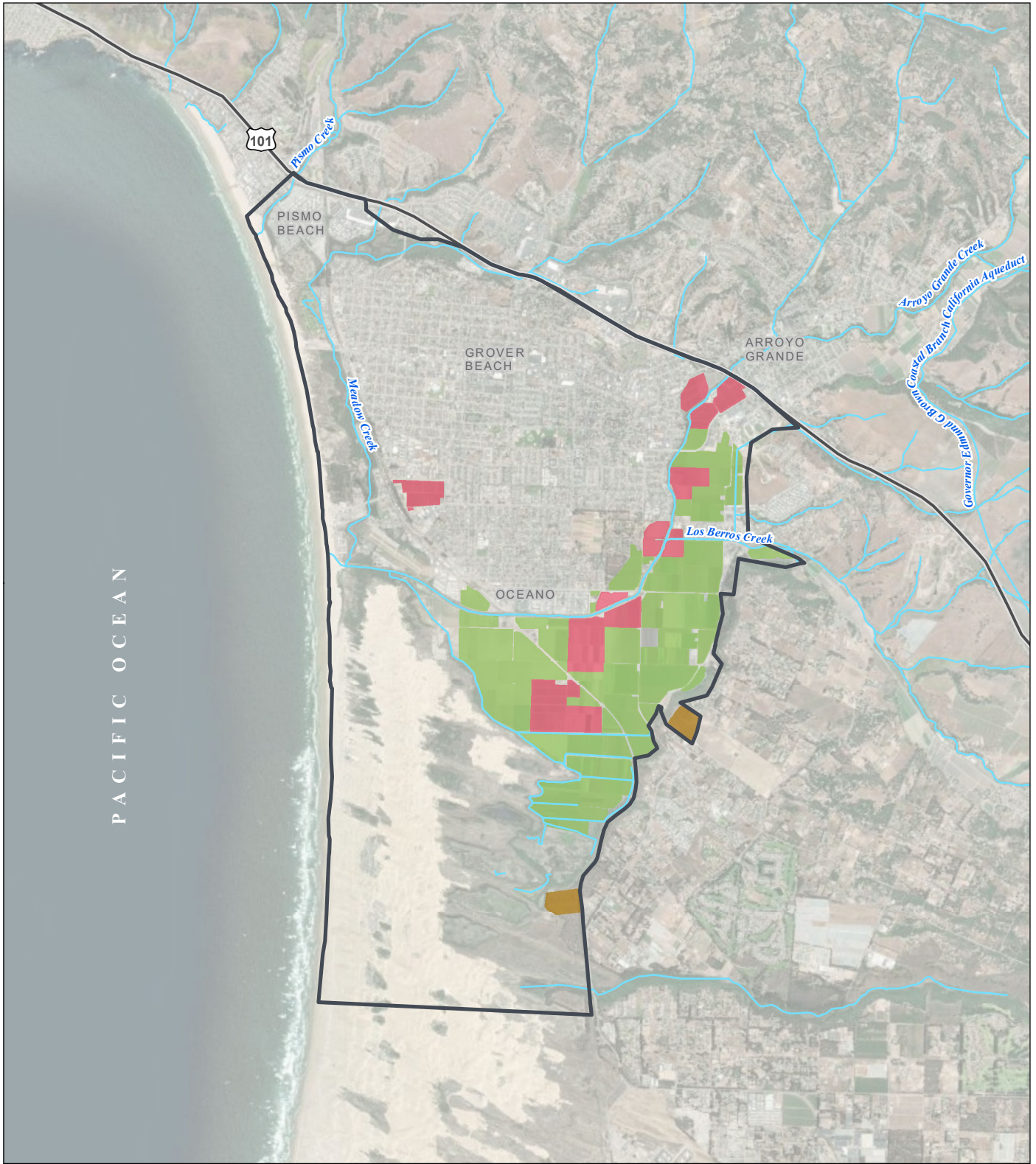
Water use refers to the total amount of water used to satisfy the needs of all water user groups. In the NCMA, water use predominantly serves urban production and agricultural applied water; a relatively small component of rural domestic use, including small community water systems; and domestic, recreational, and agriculture-related businesses.

### 4.2.1 Agricultural Water Supply Requirements

For the 2021 Annual Report, the applied irrigation demand estimations were updated using the 2015 Integrated Water Flow Model (IWFM) Demand Calculator (IDC). The IDC is a stand-alone program that simulates land surface and root zone flow processes, and, importantly for this report, the agricultural water supply requirements for each crop type. IDC applies user-specified soil, weather, and land-use data to estimate and track the soil moisture balances. More specifically, available water within the root zone is tracked for each of the crops to simulate when irrigation events take place based on crop requirements and cultural irrigation practices. The data used in the IDC program for NCMA along with their respective sources are described below.

#### Data Used in the IDC

- **Land-use Information.** The San Luis Obispo County Agricultural Commissioner's Office compiles an annual estimate of irrigated acres in the County. A view displaying the irrigated agricultural lands within NCMA for 2021 is shown in **Figure 25**, on page 68. The 2021 survey indicates a total of 1,486 acres of irrigated agriculture in the NCMA consisting predominantly of rotational crops. **Table 10** lists the crop types and acreages found in the NCMA that were used in the IDC program.
- **Climate Data.** 2021 weather data from the SLOFCWCD rain gauge in Oceano and the CIMIS Nipomo Station were used for precipitation and data related to reference ET values, respectively. The data needed to calculate reference ET values include solar radiation, humidity, air temperature, and wind speed. Both weather stations are shown in **Figure 6**, on page 21.
- **ET Values by Crop Category.** The DWR Consumptive Use Program (CUP) was used to estimate potential ET values based on specific annual climate data and crop type. The CUP used monthly climate data from the closest CIMIS station (Nipomo station) and includes crop coefficients to calculate ET values for the irrigated crop categories.



**FIGURE 25**

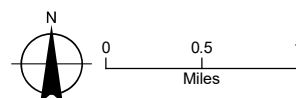
**NCMA Agricultural Land 2021**  
Northern Cities Management Area  
San Luis Obispo County, California

**LEGEND**

- Avocado
- Rotational Crops
- Strawberry

**All Other Features**

- Highway
- Watercourse
- Northern Cities Management Area



Date: January 28, 2022  
Data Sources: NCMA, ESRI, USGS, Maxar Imagery (2020)

Assumptions used in the analysis include the following:

- As the NCMA is located near the coast, agricultural practices are influenced significantly by the marine layer, a mass of air that may be of lower temperature and have higher humidity than air over inland areas. As seen in **Figure 6**, on page 21, the Nipomo CIMIS station used for climatological data in both the CUP and IDC is located farther inland than the easternmost boundary of NCMA and the recorded weather data does not fully account for the cooling and moisture effects of the marine layer.
- Use of an unadjusted calculated ET value results in a higher ET value than is actually taking place in the NCMA. Studies<sup>24</sup> have identified that ET values within the influence of the marine layer can be as much as 20 to 25 percent lower than ET values for the same crop located just outside of the marine layer influence. The distance the marine layer extends inland can vary from less than one-half mile to as much as 4 to 5 miles, depending on land topography. Low-lying areas have a higher frequency of marine layer coverage and for longer periods throughout the day.
- The NCMA is considered a low-lying area with boundaries extending between 2 and 5 miles inland. Recognizing that not all the crops would be affected by the marine layer but accounting for the cooling influence over some of the area, monthly ET values calculated based on the CIMIS Nipomo Station data were adjusted lower by 12 percent<sup>25</sup> and are shown in **Table 10**.
- **Soil Data.** The Natural Resources Conservation Service Soil Survey Geographic Database was used to collect soil parameters in the NCMA for use in the IDC. The soil properties used include saturated hydraulic conductivity, porosity, and the runoff curve numbers. The field capacity and wilting points were developed on the basis of the described soil textures (i.e., sand, loam, sandy clay) and industry standards. The IDC relies on soil properties for estimating water storage, deep percolation, and runoff; all of which lead to a refined estimation of applied water.

**Table 10. NCMA Crop Acreages and Calculated Evapotranspiration, 2021**

Crop Type	Acreage	2021 Potential ET <sup>1</sup> (AF/Acre)
Rotational Crops	1,105	1.9 <sup>2</sup>
Strawberries	336	0.8
Avocados	45	2.0

**Notes**

<sup>1</sup> See ET Values by Crop Category, in text section above.

<sup>2</sup> Rotational crop ET is based on a rotation of two to three crops.

ET = evapotranspiration      AF = acre-feet

**Model Development and Computations**

The IDC is written in FORTRAN 2003 using an object-oriented programming approach. The program consists of three main components: (1) input data files, (2) output data files, and (3) the numerical engine that reads data from input files, computes applied water demands, routes water through the root zone, and exports the

<sup>24</sup> Irrigation Training and Research Center <<http://www.itrc.org/etdata/etmain.htm>> (Cal Poly, 2019) provides typical-year (1997 Hydrology) ET values using various irrigation methods for Zone 3, the coastal outside marine layer; and Zone 1, the marine layer. The computed percentage reduction in ET to Zone 3 values range from 11 percent for rotational crops (small vegetables) to 19 percent for strawberries.

<sup>25</sup> A single ET reduction value is used based on changing location and rotation of crop types relative to influence of marine layer.



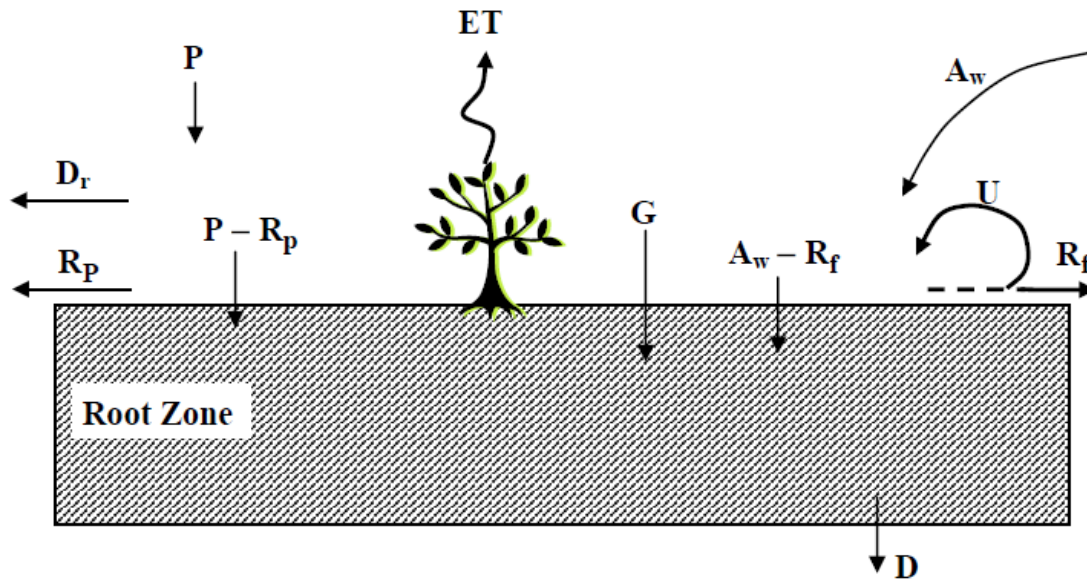
results to the output files. The flow terms used in the root zone routing are defined in **Table 11** and shown in the graphic below the table. Drainage from ponded areas ( $D_r$ ) was not applicable because there are no ponded crops in the NCMA; data related to generic soil moisture ( $G$ ) were not available.

**Table 11. Flow Terms Used in Root Zone Routing for IDC Model**

Abbreviation	Term	Notes
P	Precipitation	User Specified
ET	Evapotranspiration	IDC Output
G	Generic source of moisture (i.e., fog, dew)	Data Not Available
$A_w$	Applied water	IDC Output
$D_r$	Outflow resulting from drainage of ponded areas (e.g., rice, refuges)	Not Applicable
$R_p$	Direct runoff	IDC Output
$R_f$	Return flow	User Specified (fraction of applied water)
U	Re-used portion of return flow	User Specified (fraction of return flow)
D	Deep percolation	IDC Output

**Notes**

Integrated Water Flow Model (IWFM) Demand Calculator (IDC) (DWR, 2016)



Source: California DWR (2016).

All extracted geospatial information was applied to a computational grid within the IDC framework to simulate the root zone moisture for 2021 in NCMA agricultural areas. The IDC provides the total water supply requirement for each crop category met through rainfall and applied irrigation water in agricultural areas based on user-defined parameters for crop evaporation and transpiration requirements, climate conditions, soil properties, and agricultural management practices. The sources for data related to crop demands (i.e.,

potential ET), climate conditions, and soil properties are discussed above. The computations for actual crop ET (versus potential ET), applied water, and deep percolation are described below.

The potential ET is the amount of water a given crop will consume through evaporation and/or transpiration under ideal conditions (i.e., fully irrigated 100 percent of the time). Fully irrigated conditions mean that the water required to meet all crop demands is available. Water is available to the crops when the soil moisture content within the root zone is between the field capacity and the wilting point. When the soil moisture is above the field capacity, some water will go to runoff and/or deep percolation; when the soil moisture is below the wilting point, it is contained in the smallest pore spaces within the root zone and considered unavailable to the crops.

The difference between the field capacity and the wilting point is the total available water (TAW). In IDC, when the soil moisture is above one-half of the TAW, the crop ET will be equal to the potential ET. However, if the soil moisture is below one-half of the TAW, the plants will experience water stress and ET decreases linearly until it reaches zero at the wilting point. This method of simulating water stress is similar to the method described in Allen et al. (1998) to compute non-standard crop ET under water stress conditions.

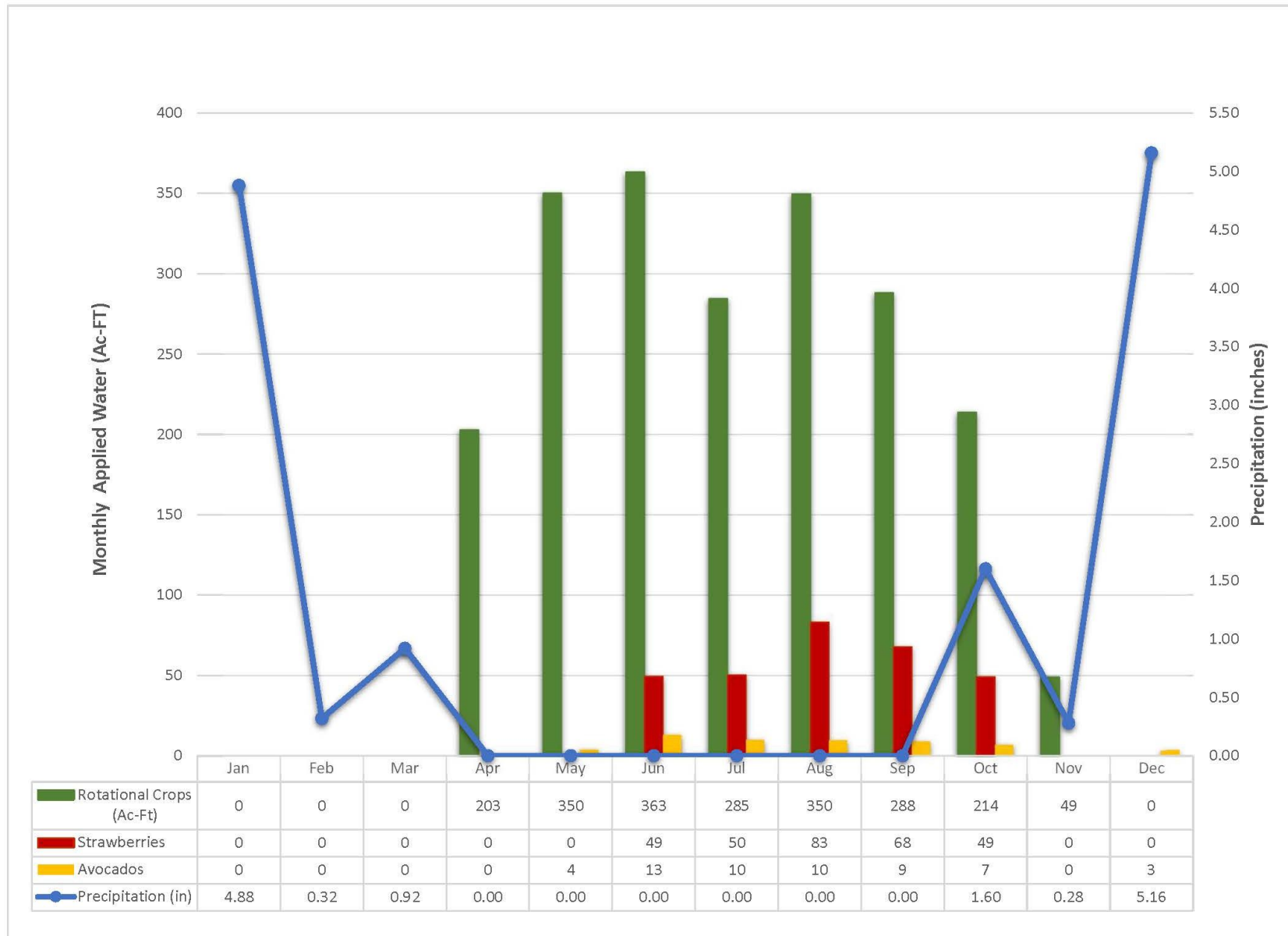
The IDC monitors the moisture content within the root zone and applies water by triggering an irrigation event when the calculated soil moisture is below a user-specified minimum allowable soil moisture requirement. For this application of the IDC, the minimum soil moisture requirement was set to trigger an irrigation event when the soil moisture fell below one-half the TAW to limit water stress in the crops. During an irrigation event, the soil moisture content in the root zone reaches field capacity. If precipitation occurs, soil moisture may increase above field capacity, generating deep percolation and potentially runoff, both depending on the quantity and temporal distribution of rainfall.

Deep percolation is the vertical movement of water through the soil column flowing out of the root zone resulting in the potential for groundwater recharge. The IDC applies the van Genuchten-Mualem equation (Mualem, 1976; van Genuchten, 1985) to compute deep percolation using the user-defined saturated hydraulic conductivity and pore size distribution.

## Results

The total agricultural water supply requirements for 2021 was estimated to be 2,457 AF, and the effective precipitation (i.e., rainwater used by the crop) was 426 AF. **Figure 26**, on page 72, illustrates the estimated crop water requirement in the NCMA as calculated by the IDC and displays the three identified crop types and their estimated monthly applied water. The rotational crops have the highest water supply requirements because they cover the greatest area (see **Figure 25**, on page 68) and have the greatest annual ET (**Table 12**).

The estimated agricultural water supply requirement of 2,457 AF in 2021 is comparable to the estimated 2,308 AF in 2020. In 2014, the methodology of estimating agricultural water requirements was modified from an estimated applied rate based on hydrologic conditions to the IWFm IDC methodology described here.



**FIGURE 26.**  
**2021 ESTIMATED AGRICULTURAL WATER DEMAND AND MONTHLY PRECIPITATION AT THE SLO NO. 795 GAUGE**  
 Northern Cities Management Area  
 San Luis Obispo County, California

**Table 12. IDC Model Results of Monthly Applied Water, 2021**

	Monthly Applied Water (AF)												Annual Total (AF)
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Rotational Crops	--	--	--	203	350	363	285	350	288	214	49	--	2,101
Strawberries	--	--	--	--	--	49	50	83	68	49	--	--	300
Avocados	--	--	--	--	4	13	10	10	9	7	--	3	56
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>203</b>	<b>354</b>	<b>426</b>	<b>345</b>	<b>443</b>	<b>365</b>	<b>270</b>	<b>49</b>	<b>3</b>	<b>2,457</b>
	Monthly Precipitation (inches)												Annual Total (inches)
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Precipitation	4.88	0.32	0.92	--	--	--	--	--	--	1.6	0.28	5.16	13.16
	Monthly Unit Water Demand (AF/Acre)												Annual Total (AF/Acre)
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Rotational Crops	--	--	--	0.18	0.32	0.33	0.26	0.32	0.26	0.19	0.04	--	1.90
Strawberries	--	--	--	--	--	0.15	0.15	0.25	0.20	0.15	--	--	0.89
Avocados	--	--	--	--	0.09	0.29	0.22	0.22	0.20	0.16	--	0.07	1.25
<b>Area Weighted Average</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.14</b>	<b>0.24</b>	<b>0.29</b>	<b>0.23</b>	<b>0.30</b>	<b>0.25</b>	<b>0.18</b>	<b>0.03</b>	<b>0.00</b>	<b>1.65</b>

**Notes**

AF = acre-feet      AF/Acre = acre-feet per acre

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## 4.2.2 Rural Use

In the NCMA, rural water use refers to groundwater pumping not designated as urban use or agricultural irrigation applied water and includes small community water systems, individual domestic water systems, recreational uses, and agriculture-related business systems. Small community water systems using groundwater in the NCMA were identified initially through a review of a list of water purveyors compiled in the 2007 County IRWMP. These include the Halcyon Water System, Ken Mar Gardens, and Pacific Dunes RV Resort. The Halcyon Water System serves 35 homes in the community of Halcyon, and Ken Mar Gardens provides water supply to 48 mobile homes on South Halcyon Road. The Pacific Dunes RV Resort, with 215 RV sites, provides water supply to a largely transitory population and a nearby riding stable. In addition, an inspection of aerial photographs of rural areas within NCMA has identified about 25 homes and businesses that are served by private wells. Two mobile home communities, Grande Mobile and Halcyon Estates, are served by OCSD through the distribution system of Arroyo Grande. Therefore, the production summary of OCSD includes these two communities. Based on prior reports, it is assumed that the number of private wells is negligible within the service areas of the NCMA agencies.

The Pismo Beach Golf Course uses an onsite water well for turf irrigation. The pumped water is not metered, and the golf course operators do not know the total water use. An estimate of water demand for the golf course is based on the irrigated acreage, sandy soils, near-ocean climate, and water duty factors from the U.S. Golf Association, Alliance for Water Efficiency, U.S. Golf Courses Organization of America, and several other sources. The estimated rural water demand is provided in **Table 13**.

**Table 13. Estimated Rural Water Production, 2021**

Groundwater User	No. of Units	Estimated Water Production, AFY per Unit	Estimated Annual Water Production, AF	Notes
Halcyon Water System	35	0.40	14	1
Ken Mar Gardens	48	--	7	2
Pacific Dunes RV Resort	215	0.03	6	3
Pismo Beach Golf Course	--	--	45	4
Rural Users	25	0.40	10	1
<b>Current Estimated Rural Production</b>			<b>82</b>	

**Notes**

<sup>1</sup> Rural residential water use is assumed to include minor outdoor irrigation and is estimated at 0.4 AFY per unit.

<sup>2</sup> Demand based on metered water usage.

<sup>3</sup> Water use/unit assumes 50 percent annual occupancy and 0.06 AFY per occupied site.

<sup>4</sup> Estimated golf course demand, based on estimated water duty factor, annual ET, and irrigated acreage.

AF=acre feet

AFY = acre-feet per year

ET = evapotranspiration



### 4.2.3 Urban Production for Potable Use

Urban water production for potable use is presented in **Table 14** for each of the NCMA agencies from 2005 through 2021. These values reflect Lopez Lake deliveries, SWP deliveries, groundwater production data, and system losses, and represent all water used within the service areas of the four NCMA agencies. In the last 17 years, urban water production has ranged from 5,476 AF (2016) to 8,982 AF (2007). There has been an overall decline in urban production since 2007, although there have been slight increases since the low point in 2016. The long-term declining trend in production is likely attributed to the relatively slow economy from 2009 through 2012 and conservation activities implemented by the NCMA agencies in response to the recent historical drought. Since 2013, when urban production was 7,939 AF, urban production declined dramatically to 2016 to the lowest level in at least the past 20 years. Urban water production was 6,073 AF in 2021.

**Table 14. Historical Urban Water Production for Potable Use (Groundwater and Surface Water)**

Year	Arroyo Grande	Grover Beach	Pismo Beach	OCSD	Total Urban	Percentage of 2013 Production <sup>1</sup>
2005	3,460	2,082	2,142	931	8,615	—
2006	3,425	2,025	2,121	882	8,453	—
2007	3,690	2,087	2,261	944	8,982	—
2008	3,579	2,051	2,208	933	8,771	—
2009	3,315	1,941	2,039	885	8,180	—
2010	2,956	1,787	1,944	855	7,542	—
2011	2,922	1,787	1,912	852	7,473	—
2012	3,022	1,757	2,029	838	7,646	—
2013	3,111	1,792	2,148	888	7,939	—
2014	2,752	1,347	1,949	807	6,856	—
2015	2,239	1,265	1,736	703	5,943	75%
2016	1,948	1,210	1,646	672	5,476	69%
2017	2,194	1,248	1,700	718	5,860	74%
2018	2,212	1,221	1,720	725	5,878	74%
2019	2,139	1,193	1,648	680	5,660	71%
2020	2,317	1,289	1,777	743	6,126	77%
2021	2,307	1,277	1,771	718	6,073	76%

**Notes**

<sup>1</sup> On April 1, 2015, California Governor Jerry Brown issued an executive order (B29-2015) mandating statewide reductions in water use. The order directs the State Water Resources Control Board to implement mandatory water reductions in cities and towns across California to reduce water usage by 25 percent, compared to the amount used in 2013, through February 2016.

All units in acre-feet (AF)

— = not applicable      AF = acre-feet      OCSD = Oceano Community Services District

### 4.2.4 2021 Groundwater Pumpage

Total SMGB groundwater production in the NCMA, including urban production, applied agricultural water requirements, and rural pumping, is shown in **Table 15**. Total estimated SMGB groundwater pumpage in the NCMA in 2021 was 3,344 AF, which represents an increase from 2020 (3,064 AF).

**Table 15. NCMA Groundwater Pumpage from Santa Maria Groundwater Basin, 2021 (AF)**

Agency	Groundwater Entitlement + Ag Conversion Credit (AF)	2021 Groundwater Use from SMGB (AF)	Percent Pumped of Groundwater Entitlement
Arroyo Grande	1,202 + 121 = 1,323	129	10%
Grover Beach	1,198 + 209 = 1,407	482	34%
Pismo Beach	700	63	9%
Oceano CSD	900	85	9%
<b>Total Urban Groundwater Entitlement /Use</b>	<b>4,000 + 330 = 4,330</b>	<b>759</b>	<b>18%</b>
Agricultural Irrigation Applied Water	5,300 - 330 = 4,970	2,457	49%
Nonpotable Irrigation by Arroyo Grande	--	46	--
Rural Water Users	--	82	--
Estimated Subsurface Outflow to Ocean (2001 Groundwater Management Agreement)	200	--	--
<b>Total NCMA Groundwater Entitlement /Use</b>	<b>9,500</b>	<b>3,344</b>	<b>35%</b>

**Notes**

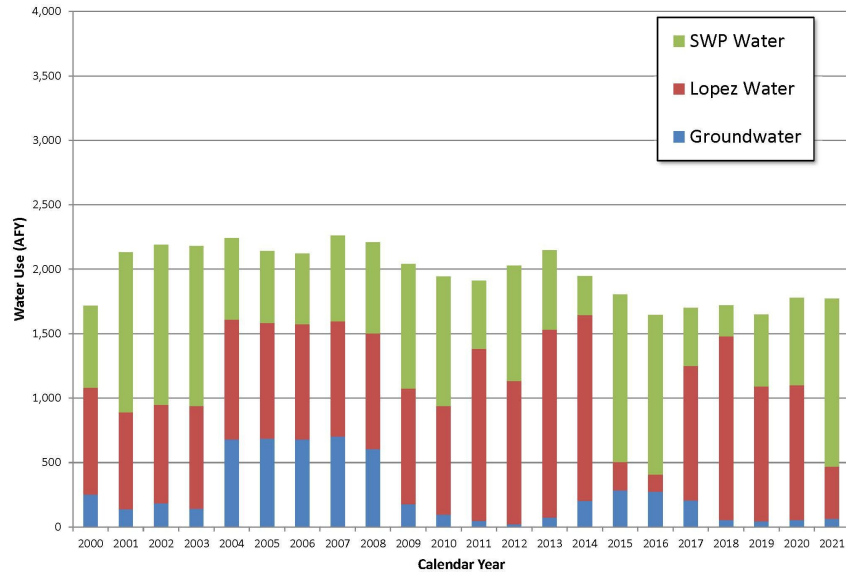
AF = acre-feet    Ag = agriculture    CSD = Community Services District    NCMA = Northern Cities Management Area

The total estimated groundwater pumpage of 3,344 in 2021 represents about 35 percent of the calculated safe yield of 9,500 AFY for the NCMA portion of the SMGB.

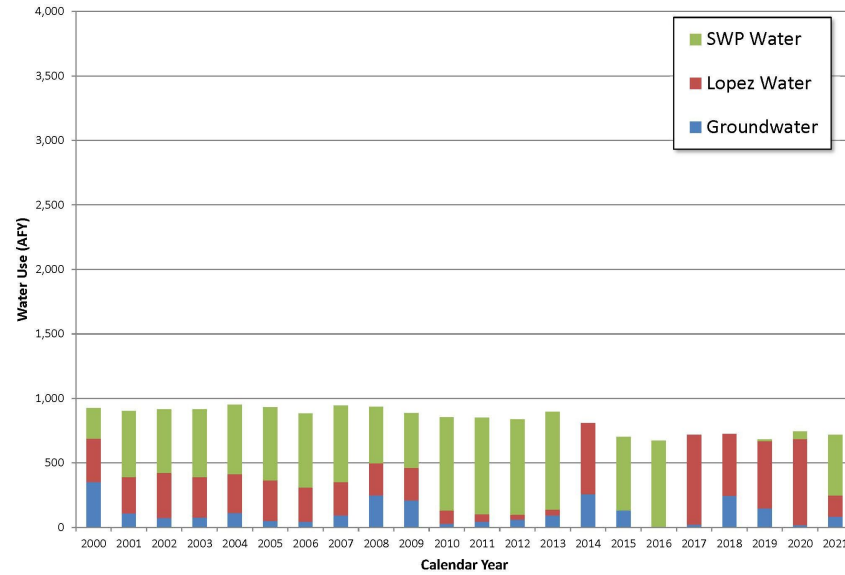
A graphical depiction of water uses by supply source for each NCMA agency since 2000 is presented as **Figure 27**, on page 78. The graphs depict changes in water supply availability and use over time, including the increased use of SWP water during the early years of the period when SWP Table A deliveries were greater. The increased dependence in 2017, 2018, 2019, and 2020 on Lopez Lake is illustrated in this graphic. With reduced access to Lopez Lake water in 2021, Oceano CSD and City of Pismo Beach utilized a greater percentage of SWP water in 2021 than in recent years. Although all four agencies pumped groundwater as part of their supply portfolios in 2021, groundwater pumped from the SMGB constituted a minor part of the overall water supply, an amount of 805 AF<sup>26</sup> or 13 percent of overall urban use.

<sup>26</sup> This total includes the 613 AF pumped by NCMA agencies and the 61 AF of non-potable irrigation production in Arroyo Grande.

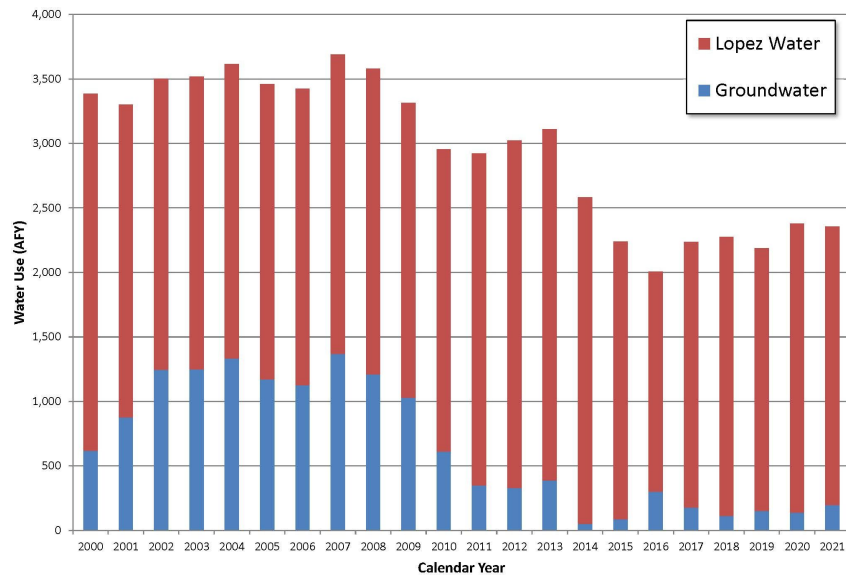
Pismo Beach



Oceano



Arroyo Grande



Grover Beach

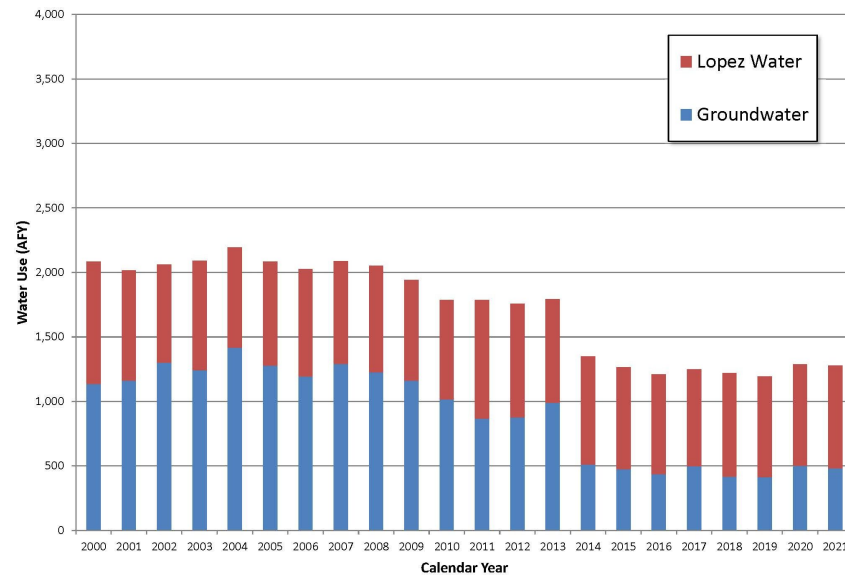


FIGURE 27. MUNICIPAL WATER USE BY SOURCE  
Northern Cities Management Area  
San Luis Obispo County, California

Notes:  
AFY - Acre-feet per year  
SWP - California State Water Project

As shown in **Figure 28**, on page 80, groundwater pumpage reached a peak in 2007 and then declined in 2008, 2009, and 2010. From 2010 through 2013, pumpage increased slightly every year, but even so, overall groundwater use remained significantly lower than previous annual pumpage rates. From 2013 through the present, annual pumpage totals have been on a downward trend. In 2021, urban potable groundwater use was 759 AF, which is 18 percent of the 4,330 AF of combined urban groundwater entitlement and agricultural conversion credit.

#### 4.2.5 Changes in Water Production

Historical water use for urban uses, agricultural irrigation, and rural uses is shown in **Table 16**.

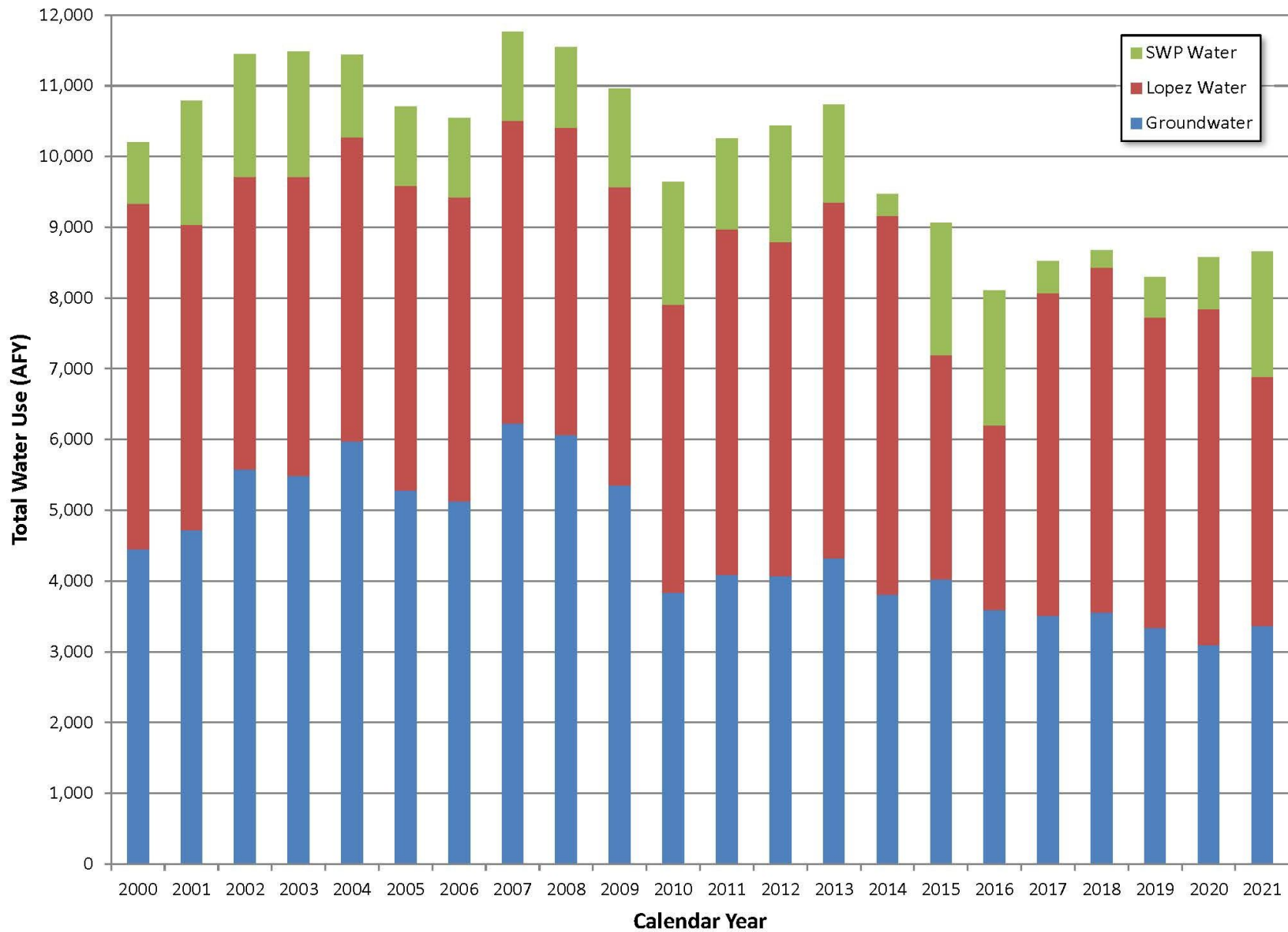
**Table 16. Historical Total Water Use (Groundwater and Surface Water, AF)**

Year	Arroyo Grande	Grover Beach	Pismo Beach	OCSD	Total Urban	Agricultural Irrigation <sup>1</sup>	Rural Water	Total Use
2005	3,460	2,082	2,142	931	8,615	2,056	36	10,707
2006	3,425	2,025	2,121	882	8,453	2,056	36	10,545
2007	3,690	2,087	2,261	944	8,982	2,742	36	11,760
2008	3,579	2,051	2,208	933	8,771	2,742	36	11,549
2009	3,315	1,941	2,039	885	8,180	2,742	36	10,958
2010	2,956	1,787	1,944	855	7,542	2,056	38	9,636
2011	2,922	1,787	1,912	852	7,473	2,742	38	10,253
2012	3,022	1,757	2,029	838	7,646	2,742	41	10,429
2013	3,111	1,792	2,148	888	7,939	2,742	42	10,722
2014	2,752	1,347	1,949	807	6,855	2,955	38	9,848
2015	2,239	1,266	1,736	703	5,943	3,008	38	8,990
2016	1,948	1,210	1,646	672	5,476	2,551	81	8,108
2017	2,194	1,248	1,700	718	5,860	2,579	80	8,519
2018	2,212	1,221	1,720	725	5,878	2,713	81	8,672
2019	2,139	1,193	1,648	680	5,660	2,554	82	8,296
2020	2,317	1,289	1,777	743	6,126	2,369	82	8,577
2021	2,307	1,277	1,771	718	6,073	2,503	82	8,658

**Notes**

<sup>1</sup> Irrigation applied water includes agricultural irrigation plus SMGB non-potable irrigation by Arroyo Grande.

AF = acre-feet      CSD = Community Services District



P:\Portland\672-Northern Cities Management Area\005-2018 Annual Report\03 Annual Report\0 Admin Draft\Figures\Parts Fig 26 NCMA Total Water Use by Source

**FIGURE 28. TOTAL WATER USE (URBAN, RURAL, AGRICULTURAL) BY SOURCE**  
 Northern Cities Management Area  
 San Luis Obispo County, California

Notes:  
 AFY - Acre-feet per year  
 SWP - California State Water Project

In general, urban water production has ranged from 8,982 AF in 2007 (**Table 16**) to 5,476 AF in 2016. Total water use since 2007 has been on a general downward trend; this overall decline in water use may be attributed to conservation activities implemented by the NCMA agencies in response to the drought.

In the agricultural irrigation category, agricultural acreage has remained fairly constant. Thus, annual applied water for agricultural irrigation varies mostly with weather conditions. Acknowledging the variability caused by weather conditions, agricultural irrigation applied water is not expected to change significantly given the relative stability of applied irrigation acreage and cropping patterns in the NCMA south of Arroyo Grande Creek.

Changes in rural domestic pumping have not been significant.



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## SECTION 5: Comparison of Water Supply and Water Production

The Baseline Available Urban Water Supplies for each of the NCMA agencies is 10,625 AFY, assuming 100 percent delivery of SWP allocation and assuming no Lopez Lake surplus water or SWP carryover (**Table 8**). In 2021, because of the availability of Lopez Lake surplus water and SWP carryover water, the total available urban water supply was 12,211 AF (**Table 9**).

As described in the 2001 Groundwater Management Agreement and affirmed in the 2002 Settlement Agreement, the calculated safe yield from the NCMA portion of the SMGB is 9,500 AFY (**Tables 8 and 15**). Because all agricultural irrigation water use is supplied by groundwater, the total available agricultural irrigation supply is a portion of the estimated safe yield; this portion was allocated as 5,300 AFY for agricultural and rural use. The agricultural conversion of 330 AFY reduces this allocation to 4,970 AFY. Of the estimated safe yield of 9,500 AFY, other than what is allocated for agricultural irrigation and rural use, the remaining 4,330 AFY is allocated for urban water use (4,330 AFY, including 4,000 AFY groundwater allocation plus 330 AFY in agricultural conversion credit) and an estimated 200 AFY for subsurface outflow to the ocean.

In 2021, the total estimated NCMA water production was 8,658 AF (**Table 17**). The 2021 water production of each city and agency is shown by source in **Table 17**. Note that the production volumes described here are gross production (if pumped groundwater) and gross deliveries (if surface water deliveries) and equal net consumptive demand plus losses and return water.

**Table 17. Water Production by Source, 2021 (AF)**

Agency	Lopez Lake	State Water Project	SMGB Groundwater	Other Supplies <sup>1</sup>	Total
<b>Urban Area</b>					
Arroyo Grande	2,158	0	129	20	2,307
Grover Beach	795	0	482	0	1,277
Pismo Beach	406	1,302	63	0	1,771
Oceano CSD	163	470	85	0	718
<b>Urban Water Use Total</b>	<b>3,522</b>	<b>1,772</b>	<b>759</b>	<b>20</b>	<b>6,073</b>
<b>Non-Urban Area</b>					
Agricultural Irrigation Applied Water	0	0	2,457	0	2,457
Rural Water Users	0	0	82	0	82
Non-potable Irrigation by Arroyo Grande	0	0	46	0	46
<b>Total</b>	<b>3,522</b>	<b>1,772</b>	<b>3,344</b>	<b>20</b>	<b>8,658</b>

**Notes**

<sup>1</sup> Other Supplies includes groundwater pumped from outside the NCMA boundaries.

AF = acre-feet    CSD = Community Services District    SMGB = Santa Maria Groundwater Basin

As shown in **Table 17**, water for urban use in 2021 was supplied to the NCMA from 3,522 AF of Lopez Lake water; 1,772 AF of SWP water; and 759 AF of groundwater. Arroyo Grande produced 20 AF from its Pismo Formation wells in 2021.

Based on the calculated yield of the NCMA portion of the SMGB, the baseline, or full allocation, of total available supply for all uses is 15,595 AFY, which is the sum of 10,625 AFY for urban use plus the allocation for agricultural irrigation and rural area of 4,970 AFY. In 2021, factoring in the SWP delivery schedule and availability of SWP carryover water and Lopez Lake surplus, the total available supply for all uses was 12,211 AF (**Table 9**) compared with actual 2021 NCMA water use of 8,658 AF (**Table 17**). It must be noted, however, that this comparative review of available 2021 supply versus production must be viewed with caution because of the potential threats to the groundwater supply (see Section 6.1, below). As described earlier, the NCMA agencies pumped only 18 percent of their “available” groundwater entitlement. Even with such minimal utilization of groundwater resources, a significant decrease of groundwater in storage occurred in the NCMA portion of the SMGB. It is clear that the NCMA agencies could not have used their entire groundwater entitlement in 2021 without significantly lowering water elevations below current conditions and potentially seriously exacerbating the threat of seawater intrusion.

## SECTION 6: Threats to Water Supply

Because the NCMA agencies depend on both local and imported water supplies, changes in either state-wide or local conditions can threaten the NCMA water supply. Water supply imported from other areas of the state may be threatened by state-wide drought, effects of climate change in the SWP source area, management and environmental protection issues in the Delta that affect the amount and reliability of SWP deliveries, and risk of seismic damage to the SWP delivery system. Local threats to the NCMA water supply similarly include extended drought and climate change that may affect the yield from Lopez Lake and reduced recharge to the NCMA. In addition, the NCMA is not hydrologically isolated from the NMMA and the rest of the SMGB, and water supply threats in the NMMA are a potential threat to the water supply sustainability of the NCMA.

There is a potential impact from seawater intrusion if the groundwater system, including the entire SMGB, is not adequately monitored and managed. In particular, management of the SMGB may need to account for sea level rise and the relative change in groundwater gradient along the shoreline.

### 6.1 Threats to Local Groundwater Supply

#### 6.1.1 Declining Water Levels

Water levels in the NCMA portion of the SMGB exhibited an overall declining trend for many years but have started to recover since about 2016. Important factors for maintaining water levels are managing inflow and outflow to the aquifer.

- **Inflow:** An important inflow component to the NCMA area is subsurface inflow into the aquifers that supply water wells serving the NCMA. Historically, subsurface inflow to the NCMA from the Nipomo Mesa along the southeast boundary of the NCMA has been an important component of groundwater recharge. This inflow is reduced from historical levels, as first recognized in 2008–2009, to “something approaching no subsurface flow” because of lower groundwater levels in the NMMA (NMMA 2nd Annual Report CY 2009, page 43) (NMMA, 2010). This condition continues, as described in all subsequent NMMA annual reports.
- **Outflow:** A major outflow component is groundwater pumpage. Total SMGB groundwater pumping in the NCMA (urban, agricultural, and rural domestic) was 3,344 AF in 2021, which is 35 percent of the court-accepted 9,500 AF safe yield of the NCMA portion of the SMGB. Such minimal utilization of the groundwater resource resulted in only a minor gain of groundwater in storage in the aquifer and a relatively slight rise in water level elevations. However, it is clear that the NCMA agencies could not have used their entire groundwater entitlement in 2021 without significantly lowering water elevations below current conditions and potentially seriously exacerbating the threat of seawater intrusion.

The serious drought from 2011 to 2015 resulted in a steady decline in groundwater in storage in the NCMA portion of the SMGB. The recent slight increase of groundwater in storage (despite groundwater pumping at only approximately one third of the safe yield, which seemingly should have resulted in significant increases in groundwater in storage) illustrates the impacts of the recent drought. However, it also illustrates the impacts of reduced subsurface inflow recharge from the east (Nipomo Mesa). This condition of a long-term decline in groundwater in storage in the NCMA, even though total pumping is currently 35 percent of the safe yield, will be exacerbated if the NCMA agencies are required to increase groundwater withdrawals because of a reduction or total loss in local surface water supplies or SWP deliveries.

#### 6.1.2 Seawater Intrusion

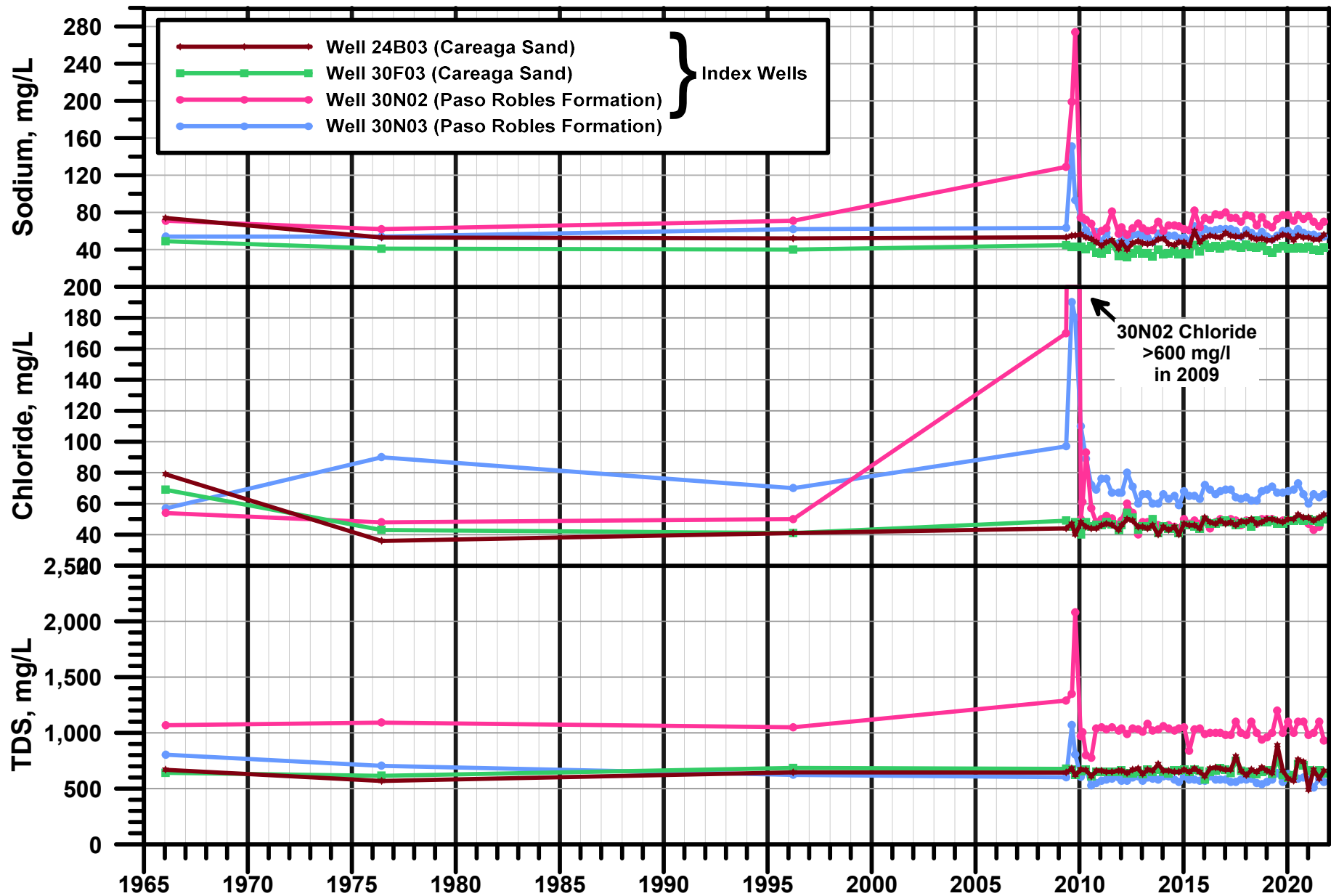
The NCMA is underlain by an accumulation of alluvial materials that slope gently offshore and extend for many miles under the ocean (DWR 1970, 1975). Coarser materials within the alluvial materials comprise aquifer

zones that receive freshwater recharge in areas above sea level. If sufficient outflow from the aquifer occurs, the dynamic interface between seawater and fresh water will be prevented from moving onshore. Sufficient differential pressure to maintain a net outflow is indicated by onshore groundwater elevations that are above mean sea level and establish a seaward gradient to maintain that outflow.

The 2008 NCMA Annual Report documented that a portion of the aquifer underlying the NCMA exhibited water surface elevations below sea level (NCMA, 2008). Hydrographs for NCMA sentry wells and the Deep Well Index (**Figures 11** through **15**, on pages 32 through 38) show that coastal groundwater elevations were at relatively low levels for as long as 2 years during that time. Such sustained low levels had not occurred previously in the historical record and reflected the impact of drought on groundwater levels. The low coastal groundwater levels indicated a potential for seawater intrusion.

Elevated concentrations of TDS, chloride, and sodium were observed in wells 30N03 and 30N02 beginning in May 2009, indicating potential seawater intrusion (**Figure 29**, on page 87, and **Figure 30**, on page 88). OCSD MW-Blue also showed elevated concentrations of TDS and chlorides, but a concurrent decline in sodium (**Figure 30**, on page 88). Concentrations of TDS, chloride, and sodium recovered to historical levels in wells 30N03 and 30N02 (one of the sentry wells comprising the Deep Well Index) by April 2010. Comparing well 30N02 to the other Deep Well Index wells, the other Deep Well Index wells showed no elevated concentrations during the same period. However, comparing well 30N02 to wells with similar screen elevations (**Figure 4**, on page 15), wells 36L01 (approximately 12,000 feet south of well 30N02) and the OCSD MW-Blue well, approximately 3,300 feet east-southeast of well 30N02, suggested that seawater intrusion perhaps progressed eastward as far as the OCSD MW-Blue well, but not as far south as well 36L01 (**Figure 30**, on page 88). While the TDS and chloride concentrations were elevated from August 2009 to July 2011 in the OCSD MW-Blue well, the sodium concentrations remained within historical levels. During the same period, TDS, chloride, and sodium concentrations remained relatively stable in well 36L01.

During 2021, there were no indications of seawater intrusion.



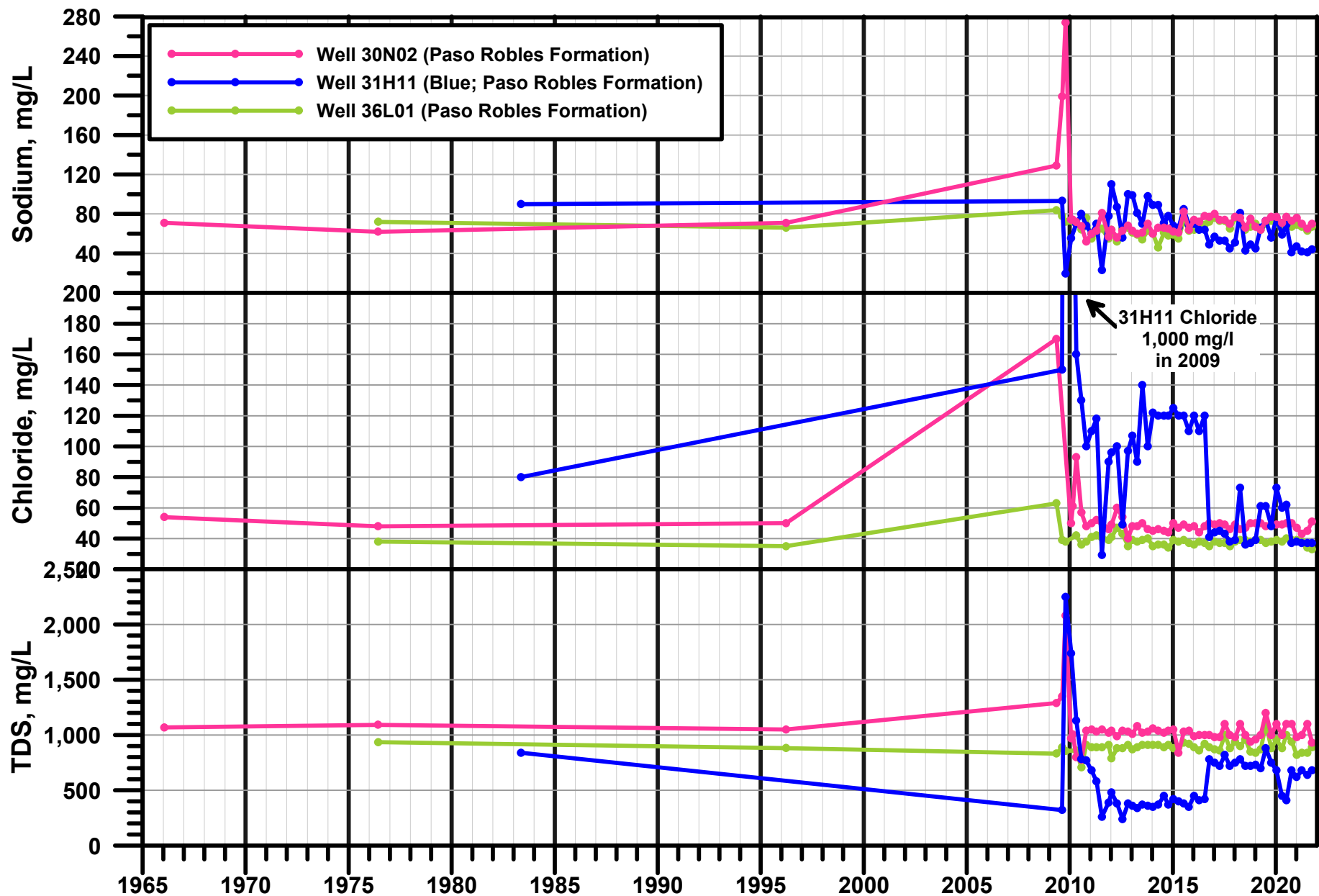
P:\Portland\672-Northern Cities Management Area\008-2021 Annual Report\03 Annual Report\0 Admin Draft\Figures\Parts Fig 29 NCMA TDS, Cl and Sodium Index Wells and 30N03.grf

**FIGURE 29. HISTORICAL TDS, CHLORIDE AND SODIUM, INDEX WELLS AND 30N03**  
 Northern Cities Management Area  
 San Luis Obispo County, California

Notes:  
 TDS - total dissolved solids  
 mg/L - milligrams per liter







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**FIGURE 30. HISTORICAL TDS, CHLORIDE AND SODIUM, WELLS 30N02, MW-BLUE AND 36L01**  
 Northern Cities Management Area  
 San Luis Obispo County, California

Notes:  
 TDS - total dissolved solids  
 mg/L - milligrams per liter



## Measures to Avoid Seawater Intrusion

In recognition of the risk of seawater intrusion, the NCMA agencies have developed and implemented a water quality monitoring program for the sentry wells and OCSD observation wells. The NCMA agencies and SLOFCWCD have worked cooperatively toward the protection of the sentry wells as long-term monitoring sites. Several measures are employed by the NCMA agencies to reduce the potential for seawater intrusion. Specifically, the NCMA agencies have voluntarily reduced coastal groundwater pumping; decreased overall water use via conservation; and initiated plans, studies, and institutional arrangements to secure additional surface water supplies. As a result, each of the four major municipal water users in the NCMA reduced groundwater use between 25 and 95 percent during the past several years. In 2021, municipal groundwater use was 759 AF, which constitutes 18 percent of the urban users' groundwater entitlement (including agricultural conversion credits) of the safe yield (**Table 7**).

According to the DWR Bulletin 63-3 report (DWR, 1970) both the Paso Robles Formation aquifer and the lower confined portion of the Cienega Valley alluvial aquifer are recharged primarily from subsurface groundwater inflow from the east, where the overlying confining layers are thin to nonexistent (DWR, 1970). These recharge areas to the east include inland reaches of Arroyo Grande Valley and portions of Nipomo Mesa (DWR, 1970). Any action that results in reduced groundwater recharge, whether it is from drought or reduction of subsurface inflow from the north and east, reduces overall recharge to the groundwater basin, lowers the gradient (or head) of the groundwater near the shoreline, and reduces subsurface outflow to the ocean, thereby increasing the potential threat of seawater intrusion. Alternatively, any action that results in increased groundwater recharge lessens the threat of seawater intrusion.

A major initiative that will provide significant protection to the threat of seawater intrusion is the development of Central Coast Blue. Central Coast Blue is a regional recycled water project that includes advanced treatment of water from the wastewater treatment plants of Pismo Beach and SSLOCSD and injection into the NCMA portion of the SMGB. Injection of the highly purified effluent will reduce the threat of seawater intrusion and improve water supply sustainability for the region. Tasks related to the development of the project that were performed prior to and throughout 2021 include preliminary design, test injection well and monitoring well siting, construction, and testing, funding pursuits appropriation, cost/benefit sharing analysis, supplemental geophysics investigation, additional groundwater modeling with the Phase 1C model, and environmental review (see additional detail in Section 1.7.2).

In 2020 the Nipomo Community Services District (NCSD) asked the NCMA agencies for a letter in support of an appeal to the Santa Barbara County Board of Supervisors to remove the 3,000 AFY volume limitation in the NCSD waterline intertie license agreement. NCSD has designed and constructed a pipeline for the Nipomo Supplemental Water<sup>27</sup> project (Supplemental Water Project) that is sized to accommodate the delivery of 6,200 AFY as provided for in the Stipulation and Judgment. It is NCSD's contention that the 3,000 AFY limitation in the license agreement is arbitrary, serves no purpose, and is in violation of Santa Barbara County's obligations under the Stipulation and Judgment to support, and not oppose, implementation of the Adjudication, including development of the Supplemental Water Project. Further, the limitation threatens the long-term sustainability of the entire Basin. Completion of the Supplemental Water Project is intended to reduce groundwater pumping, increase subsurface inflow from Nipomo Mesa to the NCMA, and help protect

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<sup>27</sup> As described in Section VI.A of the Stipulation; "The NCSD agrees to purchase and transmit to the [Nipomo Mesa Management Area] (NMMA) a minimum of 2,500 acre-feet of Nipomo Supplemental Water each Year. However, the NMMA Technical Group may require NCSD in any given Year to purchase and transmit to the NMMA an amount in excess of 2,500 acre-feet and up to the maximum amount of Nipomo Supplemental Water which the NCSD is entitled to receive under the MOU if the Technical Group concludes that such an amount is necessary to protect or sustain Groundwater supplies in the NMMA."

the groundwater resource from seawater intrusion. The NCMA agencies supplied the requested letter of support to NCSA on February 19, 2021.

## 6.2 Threats to State Water Project Supply

Both extended drought and long-term reduction in snowpack from climate change can affect SWP deliveries. Above-average precipitation in 2016, 2017, and 2019 have resulted in a modest reprieve from drought conditions locally. However, the storage capacity levels of the state's two largest reservoirs, Lake Shasta and Lake Oroville, were 45 and 35 percent capacity, respectively, as of the start of 2021, both significantly reduced from the previous year.

Leading into 2022, rainfall during the last 8 months of 2021 resulted in 7.04 inches of rain, with over five inches of this total falling in December. The initial allocation announcement by DWR, announced on December 1, 2021, informed SWP contractors that their 2022 allocation would be 0 percent of requests for deliveries, satisfying only minimum unmet water demands to meet domestic supply, fire protection, and sanitation needs (referred to as "health and safety" needs)<sup>23</sup>. However, on January 20, 2022, the SWP allocation was increased to 15 percent, following above average precipitation in December 2021. As the winter rainfall season progresses, the allocations often increase by March or April. The last 100 percent allocation—difficult to achieve even in wet years largely because of Delta pumping restrictions to protect threatened and endangered fish species—occurred in 2006.

The immediate threat of allocation reductions to Pismo Beach and OCSD, the only SWP subcontractors in the NCMA, has not significantly materialized during the past several years. The SLOFCWCD's large amount of unsubscribed Table A allocation provides a buffer, in addition to the agency's drought buffer, so that contracted volumes to SWP subcontractors, such as the OCSD and Pismo Beach, still may be provided in full. However, the SWP supply has the potential to be affected by drought as well as environmental issues, particularly involving the Delta smelt.

## 6.3 Threats to Lopez Lake Water Supply

Extended drought conditions in recent years have contributed to record low water levels in Lopez Lake; the impacts of climate change may affect future precipitation amounts in the Lopez Creek watershed. As discussed in Section 4.1.1, the Zone 3 agencies developed and implemented the LRRP in response to reduced water in storage in the lake. The LRRP is intended to reduce municipal diversions and downstream releases as water levels drop to preserve water within the reservoir for an extended drought. Despite above-average precipitation in 2016, 2017, and 2019 the LRRP has been reactivated in 2021 in response to declining storage in the reservoir. Water from Lopez Lake may be significantly reduced or unavailable to the Zone 3 agencies in the event of prolonged future drought. Without access to water from Lopez Lake, the NCMA agencies and local agriculture stakeholders may be forced to rely more heavily on their groundwater supplies and increase pumping during extended drought conditions, which could result in lowering water levels in the aquifer and an increased threat from seawater intrusion. Moreover, a reduction in downstream releases from the reservoir, as mandated by the LRRP, likely will lead to reduced recharge to the NCMA portion of the SMGB and further contribute to declining groundwater levels.

## SECTION 7: Management Activities

The NCMA and overlying private well users have actively managed surface water and groundwater resources in the area for more than 40 years. Management objectives and responsibilities were first established in the 1983 Gentlemen's Agreement, recognized in the 2001 Groundwater Management Agreement, and affirmed in the 2002 Settlement Agreement. The responsibility and authority of the Northern Parties for NCMA groundwater management was formally established through the 2002 Settlement Agreement, 2005 Stipulation, and 2008 Judgment. Throughout the long history of collaborative management, which was formalized through the Agreement, Stipulation, and Judgment, the overall management goal for the NCMA agencies is to preserve the long-term integrity of water supplies in the NCMA portion of the SMGB.

### 7.1 Strategic Plan

#### 7.1.1 Purpose and Background

An NCMA Strategic Plan was first developed in 2014 to provide the NCMA TG with a mission statement to guide future initiatives, provide a framework for identifying and communicating water resource planning goals and objectives, and formalize a 10-year work plan for implementation of those efforts. Several key objectives were identified related to enhancing water supply reliability, improving water resource management, and increasing effective public outreach. Implementation of some of these efforts continued throughout 2021.

Work began in 2019 to update the 2014 NCMA Strategic Plan. The Strategic Plan was developed over a series of strategic planning sessions and NCMA TG meetings and culminated with the publication of the Strategic Plan for the NCMA TG in March 2020. The purpose of the Strategic Plan is to provide the NCMA TG with the following:

- A mission statement to guide future initiatives
- A framework for communicating water resource goals
- A formalized work plan for the next 10 years

#### 7.1.2 Mission Statement

Through the strategic planning process, the NCMA TG developed the following mission statement to guide ongoing initiatives and plan implementation and capture the requirements outlined in the 1983 Gentlemen's Agreement, 2005 Stipulation, and the 2008 Judgment:

Preserve and enhance the sustainability of water supplies for the Northern Cities Area by:

- Enhancing supply reliability
- Protecting water quality
- Maintaining cost-effective water supplies
- Advancing the legacy of cooperative water resources management
- Promoting conjunctive use

#### 7.1.3 Objectives of the NCMA TG

Through the 2020 strategic planning process, the NCMA TG identified several key objectives to guide future efforts. These objectives include the following:

#### A. Enhance Water Supply Reliability

- Develop coordinated response plan for saltwater intrusion and other supply emergencies
- Support implementation of Central Coast Blue
- Prepare the Northern Cities for prolonged drought conditions
- Analyze impacts of pumping on the groundwater basin
- Improve protection against threats to groundwater sustainability

#### B. Improve Water Resource Management

- Improve management/conjunctive use of water resources
- Improve coordination between technical/legal/managerial initiatives
- Abide by the legal/regulatory groundwater management requirements
- Increase understanding of current and historical groundwater conditions to inform water resources initiatives

#### C. Increase Effective Outreach

- Engage agriculture stakeholders
- Improve cooperation, coordination, and information sharing with local and regional agencies to further the objectives of the NCMA agencies
- Reinforce the role of the NCMA TG as the recognized technical expert for water resources within the Northern Cities Management Area
- Increase communication with City Councils and the Board of Directors
- Maintain equity among all NCMA agencies

### 7.1.4 Strategic Initiatives and Implementation Plan

Fifteen key strategies were identified by the TG for improving the sustainability of the water resource. Strategic initiatives were then developed for each key strategy, and an extensive screening and objective ranking process was applied. Utilizing the ranked and grouped strategic initiatives, the NCMA TG developed an implementation plan for the key strategies.

The implementation plan includes a ranking for each initiative, the key participants, the required actions, an estimated budget, and an implementation time frame. The implementation time frame incorporates three periods: a current designation that refers to initiatives that the NCMA plans to complete within 1 year, a short-term designation that refers to initiatives that could be completed within 5 years, and a long-term designation that refers to initiatives that are anticipated to take longer than 5 years to implement.

## 7.2 Management Objectives

In addition to the Strategic Plan, the NCMA TG has, over the years, established eight basic Water Management Objectives for ongoing NCMA groundwater management. Many of these objectives were incorporated into the Strategic Plan but are repeated here because they form the framework to long-term strategies and objectives to effectively manage the groundwater resource. The management objectives include the following:

1. Share Groundwater Resources and Manage Pumping
2. Enhance Management of NCMA Groundwater
3. Monitor Supply and Demand and Share Information
4. Manage Groundwater Levels and Prevent Seawater Intrusion

5. Protect Groundwater Quality
6. Manage Cooperatively
7. Encourage Water Conservation
8. Evaluate Alternative Sources of Supply

Each of these objectives is discussed in the following sections. Under each objective, the NCMA TG has identified strategies to meet the objectives. These strategies are listed and then discussed under each of the eight objectives listed below. Other potential objectives are outlined in the final section.

### 7.2.1 Share Groundwater Resources and Manage Pumping

#### Strategies:

- Continued reduction of groundwater pumping; maintain pumping below safe yield.
- Coordinated delivery of Lopez Lake water to the maximum amount available.
- Continue to import SWP supplies to OCSD and Pismo Beach.
- Maintain surface water delivery infrastructure to maximize capacity.
- Utilize Lopez Lake to store additional SWP water within San Luis Obispo County.
- Modify Zone 3 agency contracts to incorporate storage provisions in the contract.

#### Discussion:

##### Maintain Groundwater Pumping Below Accepted Basin Yield

A longstanding objective of water users in the NCMA has been to cooperatively share and manage groundwater resources. In 1983, the Northern Parties mutually agreed on an initial safe yield estimate and an entitlement of pumping between the urban users and agricultural irrigation users of 57 percent and 43 percent, respectively (see Section 4.1). In this agreement, the NCMA agencies also established pumping entitlements among themselves (Section 4.1.3). Subsequently, the 2001 Groundwater Management Agreement included provisions to account for changes such as agricultural land conversions. The agreements provide that any change in the accepted safe yield based on ongoing assessments would be shared on a pro rata basis. Pursuant to the 2005 Stipulation, the NCMA agencies conducted a water balance study to update the safe yield estimate (Todd, 2007). As a result, the NCMA agencies agreed to maintain the existing pumping entitlement among the urban users and established a consistent methodology to address agricultural land use conversion.

##### Maximize Delivery of Lopez Lake Water and Continue Importing State Water Project Water

In addition to cooperatively sharing and managing groundwater resources, the NCMA agencies have coordinated delivery of water from Lopez Lake. At the same time, Pismo Beach and OCSD have continued to import SWP water. Both actions maximize use of available surface water supplies. In 2016, in response to the ongoing drought at that time and the threat of diminishing water supplies, Arroyo Grande approved a measure authorizing the purchase of SWP water from the SLOFCWCD's excess entitlement on a temporary basis and only during a declared local water emergency. That condition was not reached in 2017 nor subsequent years, and Arroyo Grande has not purchased SWP water to date.



### Modify Zone 3 Agency Contracts

An initiative to modify the Zone 3 agency contracts to incorporate storage provisions was started in late 2019 and continued throughout 2020 and 2021. By the end of 2020, the conceptual contract amendments were developed, reservoir modeling was completed, and updated contract language had been developed and reviewed by the Zone 3 Technical Advisory Committee (TAC). In 2021, a California Environmental Quality Act review was initiated to evaluate potential impacts of the proposed amendments. The administrative draft of the environmental review was presented to the Zone 3 TAC in 2021, but no public version of the document has yet been made available. Headed into 2022, the proposed Zone 3 contract changes remain a high priority for the NCMA agencies. The proposed contract language changes allow for the following:

- Allow for year-over-year individual agency storage
- Account for evaporation losses of stored water
- Allow for the reduction of entitlements or to utilize stored water to meet downstream release requirements
- Develop mechanisms to address the condition when the Zone 3 agencies do not have water to contribute to downstream release obligations
- Clarify Lopez Lake water turnout delivery capacity limitations
- Remove antiquated language from the contract that is no longer relevant
- Allow for exchanges of Lopez Lake water with SWP water during times when there is a curtailment of delivery of Lopez Lake water due to maintenance projects

The initiative to modify the contract language will provide each agency the ability to store water for future drought, improve flexibility of multi-year water supply planning, and provide an incentive for agencies to preserve water in the reservoir.

## 7.2.2 Enhance Management of NCMA Groundwater

### Strategies:

- Develop a groundwater model for the NCMA/NMMA or the entire SMGB.
- Coordinate with the County and NMMA to develop new monitoring well(s) in key locations within the SMGB.
- Develop a Salt and Nutrient Management Plan (SNMP) for the NCMA/NMMA.
- Develop and implement a framework for groundwater storage/conjunctive use, including return flows.
- Update the 2001 Management Agreement.

### Discussion:

The NCMA agencies participated in the oversight of the performance of the SMGB characterization study (Fugro, 2015) that was finalized with the distribution of the complete data sets in March 2016. The project was conducted as part of the County IRWMP 2014 update, in part to prepare for and to provide the foundational data for development of a numerical groundwater flow model and preparation of a basin-wide SNMP. To date, the SNMP has not been initiated, but the groundwater flow modeling work has been completed through Phase 1B, as described below. This groundwater flow model is associated with Central Coast Blue, a recycled water project formerly known as the Regional Groundwater Sustainability Project. The Central Coast Blue Partner Agencies to construct an ATF to produce APW to augment its water supply through injection to recharge the aquifer and develop a seawater intrusion barrier to improve water supply reliability for the area. As part of Central Coast Blue planning and technical studies, a localized groundwater flow model (the Phase 1A model) was developed for the northern portion of the NCMA that evaluated the concept of injecting APW

into the aquifer to increase recharge, improve water supply reliability, and help prevent future occurrences of seawater intrusion.

Based on the results of the Phase 1A model and through funding by SSLOCSD Supplemental Environmental Program, work was initiated in 2017 for development of the Phase 1B groundwater flow model. The model domain of the Phase 1B model covers the entire NCMA, NMMA, and the portion of the SMVMA north of the Santa Maria River. The purpose of the Phase 1B model and the subsequently refined Phase 1C model (see Section 1.7.3) is to evaluate additional groundwater injection and extraction scenarios to further support Central Coast Blue. The Phase 1C model, developed in 2021, is being utilized to identify the locations of the proposed injection wells, quantify the amount of water that can be injected, evaluate strategies for preventing seawater intrusion, and develop estimates of the overall yield that the Central Coast Blue stakeholders will be able to receive from the project. The Phase 1C model will also be a tool for the NCMA agencies to further evaluate basin yield and basin management initiatives.

As part of the SLOFCWCD's SMGB characterization study (Fugro, 2015), continuous monitoring transducers were installed in 2015 in coastal sentry wells 36L01 and 36L02 (which are part of the NCMA monitoring program) and in wells 11N/36W-12C01 and 11N/36W-12C02 (located in the NMMA and monitored by the County and by NMMA). As a result, continuous water level and field-parameter water quality data were collected from these wells throughout 2021.

Throughout 2021, the TG discussed various components and approaches to updating the 2001 Management Agreement. These discussions will continue in 2022.

The monthly NCMA TG meetings provide for collaborative development of joint budget proposals for studies and plans and shared water resources. In addition, the monthly meetings provide a forum for discussing the data collected as part of the quarterly monitoring reports.

### 7.2.3 Monitor Supply and Demand and Share Information

#### Strategies:

- Develop a Water Supply, Production, and Delivery Plan (WSPDP).
- In conjunction with and through the umbrella of the Zone 3 agencies and SLOFCWCD, continue efforts to evaluate potential drought emergency options and implement drought emergency actions.
- Develop a coordinated Water Shortage Contingency Plan to respond to a severe water shortage condition in the NCMA.
- Share groundwater pumping data at monthly NCMA TG meetings.
- Evaluate future water demands through comparison with the following UWMP projections:
  - Arroyo Grande 2015 UWMP<sup>28</sup> (WSC, 2017)
  - Pismo Beach 2020 UWMP (WSC, 2021)
  - Grover Beach 2020 UWMP (MKN, 2021)
  - OCSD is not required to prepare a UWMP because the community population does not meet the minimum requirement threshold.

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<sup>28</sup> Revised and updated, January 2017; 2020 UWMP update is in process.

## Discussion:

### Water Supply, Production and Delivery Plan

In January 2015, the NCMA agencies developed a Water Supply, Production, and Delivery Plan (WSPDP) that applies the strategic objectives to the various supplies available to the area. The NCMA area receives supplies from Lopez Lake, the SWP, and the SMGB.

The purpose of the WSPDP is to provide the NCMA agencies with a delivery plan that optimizes use of existing infrastructure and minimizes groundwater pumping from the SMGB. The plan includes the development of a water supply and delivery modeling tool for the NCMA agencies, evaluation of three delivery scenarios, and development of recommendations for water delivery.

The WSPDP made recommendations that were implemented or subject to further study. Components of the WSPDP and the various recommendations incorporated into the Plan are summarized throughout Section 7.

The recommendations of the WSPDP reinforce the ongoing management efforts by the NCMA and provide potential projects to improve water supply reliability and protect water quality during periods of drought. Ongoing work to implement the recommendations includes evaluation of additional delivery facilities to add operational flexibility to ensure optimum use of all supplies.

Implementing the WSPDP has allowed the NCMA to minimize the use of groundwater thereby protecting against seawater intrusion while meeting the needs of its customers and other water users.

The WSPDP now provides a framework for the NCMA to manage the groundwater resource actively and effectively, particularly in years of below-normal rainfall and below “normal” SWP delivery schedules. The WSPDP outlines a strategy to provide sufficient supplies to NCMA water users in instances of reduced SWP delivery. Specifically, in 2021, municipal groundwater pumpage totaled 759 AF. The pumped volume of 759 AF constitutes approximately 18 percent of the volume allotted to the agencies through the 1983 Gentlemen’s Agreement and 2005 Stipulation.

Seawater intrusion is the most important potential adverse impact for the NCMA agencies to consider in the efforts to effectively manage the aquifer. Seawater intrusion, a concern since the 1960s, would degrade the quality of water in the aquifer and potentially render portions of the SMGB unsuitable for groundwater production (DWR, 1970).

A Deep Well Index of the three primary deep sentry wells of 7.5 feet above sea level has been recognized as the threshold, above which it is thought that there is sufficient fresh water (groundwater) outflow to prevent seawater intrusion. From late 2009 to April 2013, the NCMA agencies’ management of groundwater levels and groundwater pumpage maintained the Deep Well Index above the 7.5-foot level. Then in mid-to-late 2013, 2014, and 2015, groundwater levels dropped below the target index value on several occasions and often remained below the target elevation for several months on end. In 2015, the groundwater levels were generally between 4 and 7 feet below the 7.5-foot target index level. Groundwater elevations dropped below the Deep Well Index threshold several months in 2016, but this occurred for a shorter duration than in 2015, with groundwater elevations reaching less than 2 feet below the target value. In 2017, the Deep Well Index remained above the 7.5-foot threshold value the entire year for the first time since 2012 (except for a very brief period between August 18 and August 29, 2017, when the agencies were forced to increase groundwater pumping due to a maintenance shutdown of the Lopez Lake water supply). In subsequent years, the Deep Well Index has generally started the year above the trigger value, then dropped below the 7.5-foot threshold at some point during the summer or fall and then risen again above the threshold value where it remained through the end of the year (**Figure 12**, on page 35).

In 2021, the Deep Well Index started the year above the trigger value with an index value of more than 9 feet in January. It continued to rise, reached a high of nearly 10 feet during February, and then began to decline. The index value dropped below the 7.5-foot trigger value by July and continued to fall to a low point of just over 6 feet in late October. A slow recovery occurred through November, followed by a more rapid recovery in December, coincident with the above average monthly rainfall received in December. The index value continued to rise throughout the end of the year and finished 2021 at about 9 feet above sea level (Figure 12, on page 35).

### Zone 3 Extended Drought Emergency Options

Management activities have become more closely coordinated among the NCMA agencies as a result of the 2011 through 2015 drought. In particular, the implementation of the LRRP limited municipal diversions and downstream releases from Lopez Lake to ensure that water is available for future potentially dry years. In addition, the Zone 3 agencies (which include the NCMA agencies) initiated a long-term drought planning effort. The planning effort is intended to prepare water supplies for periods of extended drought conditions.

The NCMA agencies, in conjunction with the other Zone 3 agencies and SLOFCWCD, continue efforts to evaluate potential drought emergency options and implement drought emergency actions. This initiative includes identification, evaluation, and ranking of potential options available to Zone 3 to improve the reliability of its water supplies. The Zone 3 agencies and the County have pledged to work collaboratively to continue to evaluate and implement emergency water supply reliability options as required in conditions of extended drought.

In 2019, the County Board of Supervisors, in coordination with the NCMA agencies and other Zone 3 partners, approved a professional services contract for the 2019–2020 Winter Season Cloud Seeding Program for the Lopez Lake Watershed. The program is conceived to be a 3-year program. On November 17, 2020, the County Board of Supervisors approved the Zone 3 Cloud Seeding Program for 2020–2021. For the 2021 winter season, cloud seeding operations were conducted to enhance precipitation in the Lopez Lake drainage. The Cloud Seeding Program contractor recommended a transition to a “ground-only” seeding program for the 2021 winter season to increase the overall program efficiency. The operational period ran from December 1, 2020, to April 15, 2021, during which seeding opportunities occurred on 4 storm events.

Additional potential drought emergency options that the Zone 3 agencies have evaluated in the past few years include the following:

- **State Water Project.** Maximize importation of SLOFCWCD SWP supplies, including subcontractor supplies and the large amount of unsubscribed Table A allocation.
- **Surplus Nacimiento Water Project (NWP) Water.** Investigate transfer/exchange opportunities to obtain surplus NWP water for the Zone 3 agencies (i.e., exchange agreements with the City of San Luis Obispo and the Chorro Valley pipeline SWP subcontractors).
- **Water Market Purchases.** Investigate opportunities to obtain additional imported water and deliver it to the Zone 3 agencies through the SWP infrastructure (e.g., exchange agreements with San Joaquin/Sacramento Valley farmers, water broker consultation, groundwater banking exchange agreements, and others).
- **Morro Bay Desalination Plant Exchanges.** Investigate opportunities to obtain SWP water from Morro Bay.
- **Land Fallowing.** Evaluate potential agreements with local agriculture representatives to offer financial incentives to fallow land within the Arroyo Grande and Cienega Valleys to make that irrigation water available for municipal use.

- **Enhanced Conservation.** Evaluate opportunities for enhanced water conservation by the Zone 3 agencies (e.g., water rationing, no outdoor watering, agriculture water restrictions) to preserve additional water.
- **Nacimiento/California Men's Colony Intertie.** Complete design of a pipeline that would connect the NWP pipeline to the California Men's Colony (CMC) Water Treatment Plant. Investigate opportunities for Zone 3 agencies to purchase NWP water and use exchange agreements and existing infrastructure to deliver additional water to Zone 3 through the Coastal Branch pipeline.

### Urban Water Management Plans

Arroyo Grande is in the process of updating their UWMP. Pismo Beach and Grover Beach have each completed their 2020 UWMPs in June and December 2021, respectively. OCSD is not required to prepare an UWMP because the community population does not meet the minimum requirement threshold; however, many of the aspects of a UWMP are addressed through OCSD's participation in the NCMA planning process. New to the 2020 UWMP, water suppliers are required to prepare a standalone Water Shortage Contingency Plan (WSCP) that can be updated independently of the UWMP. A WSCP documents a supplier's plans to manage and mitigate an actual water shortage condition, should one occur because of drought or other impacts on water supplies.

### Coordinated and Shared Data

Regular monitoring of activities that affect the groundwater basin and sharing of that information have occurred for many years. The monitoring efforts include gathering data on hydrologic conditions, water supply and demand, and groundwater pumping, levels, and quality. The current monitoring program is managed by the NCMA agencies in accordance with the 2005 Stipulation and the 2008 Judgment, guided by the July 2008 Monitoring Program for the NCMA. The monitoring data and a summary of groundwater management activities are summarized in the annual reports. Arroyo Grande, Grover Beach, and Pismo Beach have each evaluated their future water demands as part of their respective UWMPs. The NCMA shares information with the two other management areas (NMMA and SMVMA) through data exchange throughout the annual report preparation cycle.

## 7.2.4 Manage Groundwater Levels and Prevent Seawater Intrusion

### Strategies:

- Use stormwater ponds to capture stormwater runoff and recharge the groundwater basin.
- Install transducers in key monitoring wells to provide continuous groundwater elevation data. The following wells have transducers:
  - 24B03 (North Beach Campground)
  - 30F03 (Highway 1)
  - 30N02 (Pier Avenue)
  - 36L01 (Oceano Dunes)
  - 36L02 (Oceano Dunes)
  - 32C03 (County Monitoring Well No. 3)
- Collect and evaluate daily municipal pumping data to determine the impact on local groundwater elevation levels.



## Discussion:

Prevention of seawater intrusion through the management of groundwater levels is essential to protect the shared resource. The NCMA agencies increase groundwater recharge with stormwater infiltration and closely monitoring groundwater levels and water quality in sentry wells along the coast.

Arroyo Grande and Grover Beach each maintain stormwater retention ponds within their jurisdictions; the SLOFCWCD maintains the stormwater system, including retention ponds, in OCSD. These ponds collect stormwater runoff, allowing it to recharge the underlying aquifers. There are approximately 140 acres of detention ponds in Arroyo Grande and 48 acres of detention ponds in Grover Beach. The stormwater detention pond in OCSD is approximately one-half acre. Grover Beach modified its stormwater system in 2012 to direct additional flow into one of its recharge basins.

The San Luis Obispo County Stormwater Resource Plan (Stormwater Resource Plan) (SLO Co., 2019) was submitted to the SWRCB for review on February 28, 2019; final approval of the plan was attained on February 25, 2020. The purpose of the Stormwater Resource Plan is to identify and prioritize stormwater and dry weather runoff capture projects in the County through detailed analyses of watershed conditions and processes, surface and groundwater resources, and the multiple benefits that can be achieved through stormwater-related capital projects and other programmatic actions (SLO Co., 2019). The Stormwater Resource Plan identifies four proposed projects within the NCMA, including the Pismo Preserve Roads Improvement Project, the Oceano Drainage Improvement Project (which was completed in 2020), South Halcyon Green/Complete Street, and a stormwater infiltration basins project. In 2019, Oceano CSD started design of the Oceano Stormwater Capture and Groundwater Recharge Project. These proposed projects emphasize water supply augmentation, environmental restoration and other community benefits, including an estimated annual infiltration capacity of 26 AF and an instantaneous floodwater capture capacity of 3.37 AF (SLO Co., 2019).

Although closely related to the objectives to manage pumping, monitor supply and demand, and share information, this objective to manage groundwater levels and prevent seawater intrusion also specifically recognizes the proximity of production wells to the coast and the threat of seawater intrusion. The NCMA agencies and SLOFCWCD have long cooperated in the monitoring of groundwater levels, including quarterly measurement by the NCMA of groundwater levels in sentry wells at the coast. Upon assuming responsibility for the coastal monitoring wells, the NCMA became aware of the need to upgrade the condition of the sentry wells. In July 2010 the wellheads (surface completions) at the four sentry monitoring well clusters in the NCMA were renovated (Todd, 2010). The renovations included raising the elevations of the top of each individual well casing by 2 to 3 feet and resurveying relative to the NAVD 88 standard in late September 2010 (Wallace Group, 2010). The individual well casings are now above the ground surface and protective locking steel risers enclose each cluster. As a result of this work, the sentry wells in the NCMA now are protected from surface contamination and tampering.

Quarterly measurement of groundwater levels aids in assessing the risk of seawater intrusion along the coast. To enhance the data collection and assessment efforts, the NCMA installed transducers in four of the key sentry monitoring wells (24B03, 30F03, 30N02, and 24B01) to provide continuous groundwater levels at key locations (the transducer in the shallow completion 24B01 was later removed). By combining these data with the collection and evaluation of daily municipal pumping data, the NCMA is better able to determine the response of local groundwater levels to extractions and, therefore, can better manage the aquifer and NCMA portion of the SMGB.

To gain insight into water level fluctuation and water quality variation in the area between the NCMA and NMMA, a continuous monitor was installed in County Monitoring Well #3 (32C03), which was constructed and is owned by the County as part of the County-wide groundwater monitoring network. Water level monitoring



was initiated in April 2012, when sensors were installed to document water level, temperature, and specific conductivity.

In 2015, continuous monitoring sensors were installed in coastal monitoring wells 36L01 and 36L02 located in the Oceano Dunes. Data from the transducers in these wells now are collected on a quarterly basis along with the other sentry wells.

Additional studies to enhance basin management efforts that have been discussed by the NCMA TG include the following:

- Consider implementation of a monthly groundwater elevation data analysis of the sentry wells during periods when the Deep Well Index value is below the index target of 7.5 feet above sea level for an extended period. Given that the index value generally has remained steady because of reduced groundwater pumping, the NCMA has deferred the issue of monthly analysis.
- Consider implementation of a monthly analysis of electrical conductivity data from the wells with downhole transducers during periods when the Deep Well Index value is below the index target of 7.5 feet to track potential water quality degradation (an enhanced monitoring schedule of County Monitoring Well No. 3 is not necessary because background water quality does not change or fluctuate significantly). If electrical conductivity data suggest water quality degradation, implement a monthly sampling and monitoring program. Given that the index value generally has remained steady because of reductions in groundwater pumping, the NCMA has deferred the issue of monthly analysis.
- Assess the potential impacts on sentry well groundwater elevations from extended periods of increased groundwater pumping by conducting analytical modeling analyses to predict water level responses given certain pumping scenarios. These analyses may prove fruitful as scenarios unfold regarding decreased SWP deliveries or short-term emergency cuts to Lopez Lake deliveries. Utilization of the Phase 1C model may be used for this purpose in the future.

## 7.2.5 Protect Groundwater Quality

### Strategies:

- Perform quarterly water quality monitoring at all sentry wells and County Well No. 3.
- Gather continuous (every 4 hours) pressure (converts to depth to water), temperature, and electrical conductivity data from select monitoring wells to track water quality indicators for seawater intrusion.
- Prepare an SNMP pursuant to state policy using the results of the SMGB characterization study (Fugro, 2015).
- Construct the Central Coast Blue facility.
- Support regional recycled water project planning through performance of a Recycled Water Facility Planning Study (RWFPS) by the SSLOCS. The RWFPS was completed in 2017.

### Discussion:

The objective to protect groundwater quality is closely linked with the objective for monitoring and data sharing. To meet this objective, all sources of water quality degradation, including the threat of seawater intrusion, need to be recognized. Water quality threats and possible degradation affect the integrity of the groundwater basin, potentially resulting in loss of use or the need for expensive water treatment processes. Sentry wells are monitored quarterly for water quality and data from other NCMA production wells are assessed annually. The monitoring program includes evaluation of potential contaminants in addition to those that might indicate

seawater intrusion. Temperature and electrical conductivity probes have been installed in six monitoring wells to provide continuous water quality tracking for early indication of seawater intrusion.

The NCMA agencies participated in the oversight of the performance of the SMGB characterization study (Fugro, 2015). The project was conducted, in part, to prepare for and to provide the foundational data for preparation of a basinwide SNMP. To date, the SNMP has not been initiated.

Investigations continued throughout 2021 for work associated with the Central Coast Blue project. These efforts continue to follow up on Pismo Beach's RWFPS to investigate alternatives for constructing a recycled water system that will enable the NCMA agencies to beneficially use recycled water to augment their groundwater supply and provide a new, drought-proof source of water supply for the area.

## 7.2.6 Manage Cooperatively

### Strategies:

- Improve outreach to the agricultural community by enhancing coordination with local growers.
- Coordinate groundwater monitoring data sharing and annual report preparation with the NCMA, NMMA, and the SMVMA.
- Improve interagency coordination among the NCMA agencies and include the County.

### Discussion:

Since 1983, NCMA management has been based on cooperative efforts of the affected parties, including the NCMA agencies, private agricultural groundwater users, the County, the SLOFCWCD, and other local and state agencies. Specifically, the NCMA agencies have limited their pumping and, in cooperation with SLOFCWCD, invested in surface water supplies to reduce groundwater pumping to not exceed the safe yield of the NCMA portion of the SMGB. Other organizations participate as appropriate. Each year the NCMA TG hosts a meeting with agricultural representatives from throughout the NCMA to discuss the status of the basin, present the findings of the annual report, and develop collaborative strategies for protecting the groundwater resource. In addition to the efforts discussed in this 2021 Annual Report, cooperative management occurs through many other venues and forums, including communication by the NCMA agencies in their respective public meetings and participation in the WRAC.

The NCMA agencies participated in preparation and adoption of the 2014 update of the County IRWMP. The IRWMP promotes integrated regional water management to ensure sustainable water uses, reliable water supplies, better water quality, environmental stewardship, efficient urban development, protection of agriculture, and a strong economy. The IRWMP integrates all the programs, plans, and projects within the region into water supply, water quality, ecosystem preservation and restoration, groundwater monitoring and management, and flood management programs.

Since the 2008 Judgment, the NCMA has taken the lead in cooperative management of its management area. The NCMA TG met monthly (at a minimum) throughout 2021 and has been a willing and active participant in the SMGBMA technical subcommittee, which first met in 2009 (the SMGBMA technical subcommittee did not meet in 2021). The purpose of the SMGBMA technical subcommittee is to coordinate efforts such as enhanced monitoring of groundwater levels and improved sharing of data among the management areas. With the current threats to water supply in all management areas, greater communication, analytical collaboration, and data sharing are encouraged, especially between NCMA and NMMA.

Actions initiated by NCMA in early 2016 resulted in increased discussion and collaboration between the NCMA and NMMA that is ongoing. The NCMA-NMMA Management Coordination Committee has met several times since 2017 to discuss items of mutual concern and develop strategies for addressing the concerns.

Another area of increased mutual collaboration between the NCMA and NMMA was the formation of a technical team, consisting of representatives from the NCMA and NMMA, to collaboratively develop a single data set of water level data points to prepare a consistent set of semiannual water level contour maps for the NCMA and NMMA, so that the maps from each management area would represent a mutually agreed upon condition at the NCMA/NMMA boundary. This collaboration continued throughout 2021 through continued assessment and evaluation of the water level database, sharing of new data, and discussions of knowledge of hydrogeologic conditions gained. The result has been a series of groundwater elevation contour maps of both the NCMA and the NMMA that reflect water level conditions at the NCMA/NMMA boundary.

A Modeling Subcommittee, composed of representatives from the NCMA and NMMA, was formed to discuss the development of a numerical groundwater flow model of the portion of the SMGB north of the Santa Maria River. When the Phase 1B groundwater flow model project was initiated in 2017, representatives from this subcommittee formed a technical review and advisory committee to provide input to the modeling consultant and monitor progress. An NMMA representative participated in the technical review and in an advisory capacity throughout the development of the Phase 1B model. The Modeling Subcommittee has not met since completion of the Phase 1B modeling project.

## 7.2.7 Encourage Water Conservation

### Strategies:

- Share updated water conservation information.
- Implement UWMPs.

### Discussion:

Water conservation, or water use efficiency, is linked to the monitoring of supply and demand and the management of pumping. Water conservation reduces overall demand on all sources, including groundwater, and supports management objectives to manage groundwater levels and prevent seawater intrusion. In addition, water conservation is consistent with state policies seeking to achieve a 20 percent reduction in water use by the year 2020 (DWR et al., 2010). Water conservation activities in the NCMA are summarized in various documents produced by the NCMA agencies, including the 2020 UWMPs of Arroyo Grande (in progress), Pismo Beach (WSC, 2021), and Grover Beach (MKN, 2021). (OCSD is not required to prepare an UWMP.)

In addition to ongoing water conservation efforts, the drought conditions that extended throughout 2016 led the NCMA agencies to increase their efforts to reduce water use. The statewide mandatory water conservation requirements (signed into law on April 1, 2015, by the governor [Executive Order B-29-15]) that enacted mandatory water conservation requirements because of statewide drought conditions and the historic low Sierra snowpack measurements were continued throughout 2016 and into early 2017. On April 7, 2017, the State of California lifted the drought emergency and mandated water use restrictions throughout the state.

The water conservation measures instituted by each NCMA agency are summarized below.

## Arroyo Grande

On April 7, 2017, the State of California took action to lift the drought emergency and mandated water use restrictions throughout the state. The action also eliminated the State's mandate for Arroyo Grande to save 28 percent of its water use. In response, the Arroyo Grande City Council approved and adopted a resolution in May 2017, rescinding the Stage 1 Water Shortage Emergency in the City, which removes the temporary water use limitations that established individualized water budgets for all residential customers. During the State-mandated Stage 1 restrictions, Arroyo Grande's water use reduction was, on average, 42 percent compared with 2013, thereby meeting and exceeding the state mandates.

The City Council's action in 2017 was based on a determination that there was no immediate or imminent threat to the City's ability to meet the community's water supply needs. However, all established mandatory water use restrictions remained in effect, including limitations on outdoor irrigation and continued adherence to four-day outdoor irrigation based on the property address.

On October 12, 2021 Arroyo Grande City Council again declared a Stage 1 Water Shortage Emergency as a result of the ongoing severe drought conditions, low Lopez Lake levels and resulting reductions in deliveries of water from Lopez Lake. This action requires all customers to reduce water usage by a certain percentage compared to the same billing period in 2020, referred to as the baseline. Residential customers will be required to reduce consumption by a certain percentage based upon their billing tier: Tier 1 customers with bi-monthly usage of 0 – 9 units will not be required to reduce consumption but cannot increase usage above their assigned baseline; Tier 2 customers with bi-monthly usage of 10 – 18 units will be required to reduce consumption by 7 percent; and Tier 3 customers with bi-monthly usage of 19 units or more will need to reduce usage by 14 percent. This structure allows residents to choose how to utilize their water rather than mandate specifically how reductions are achieved. Commercial/Institutional customers with separate irrigation meter accounts will have to reduce water use by 25 percent.

Mandatory water conservation measures that remain in place include the following:

- Use of water that results in excessive gutter runoff is prohibited.
- No water will be used for cleaning driveways, patios, parking lots, sidewalks, streets, or other such use except where necessary to protect the public health and safety.
- Outdoor water use for washing vehicles shall be attended and have hand-controlled watering devices, typically including spring-loaded shutoff nozzles.
- Outdoor irrigation is prohibited between 10 a.m. and 4 p.m.
- Irrigation of private and public landscaping, turf areas, and gardens is permitted at even-numbered addresses only on Mondays and Thursdays, and at odd-numbered addresses only on Tuesdays and Fridays.
- No irrigation of private and public landscaping, turf areas, and gardens is permitted on Wednesdays. Irrigation is permitted at all addresses on Saturdays and Sundays.
- In all cases, customers are directed to use no more water than necessary to maintain landscaping.
- Emptying and refilling swimming pools and commercial spas are prohibited except to prevent structural damage and/or to provide for the public health and safety.
- Use of potable water for soil compaction or dust control purposes in construction activities is prohibited.

To help manage the use of water, the City offers water conservation incentive programs designed to decrease overall water use. The conservation and incentive programs include the following:

- **Cash for Grass.** This program reimburses residents \$1 per square foot of turf removed with a minimum of 500 square feet of turf removed and a maximum of 5,000 square feet of turf removed. Turf must be replaced with drought-tolerant plants, permeable mulch or artificial turf. Applicants are required to remain in compliance with the program's terms and conditions for a five year period following the rebate.
- **Plumbing Retrofit Program.** This program includes installation or adjustment of showerheads, toilets, faucet aerators, and pressure regulators for single-family and multi-family residential units constructed before 1992. This program has been in place since 2004 at an expense to the City of more than \$1.55 million.
- **Water-Wise Landscaping Program.** This program provides resources for designing and installing water-wise landscaping in San Luis Obispo County, selecting climate-appropriate plants, and irrigation and drainage improvements that will help residents improve their landscaping and protect the watershed.
- **Washing Machine Rebate.** This program pays water customers a one-time rebate for the installation of a certified water-efficient washing machine.
- **Mandatory Plumbing Retrofit.** Upon change of ownership of any residential property, the seller must retrofit the property's plumbing fixtures to meet defined low-water-use criteria.
- **Water Conservation Hotline.**

### Pismo Beach

In 2014, Pismo Beach introduced the first-in-the-state waterless urinal mandate and a 0.5-gallon per minute (gpm) restroom aerator retrofit requirement. The components of this program include the following:

- **Waterless urinal retrofits.** All existing urinals in the City were retrofitted to waterless urinals before February 14, 2016.
- **Faucet aerators.** New residential restroom construction requires faucets that are fitted with aerators that emit no more than 0.5 gpm. Restroom faucets in all publicly accessible restrooms, including those in hotel rooms, lobbies and restrooms, restaurants, schools, commercial and retail buildings, public buildings, and similar publicly accessible restrooms were retrofitted to install aerators that emit no more than 0.5 gpm.
- **Sub-meters in new construction.** All new multi-unit buildings, regardless of proposed use, were required to have a separate sub-meter capable of measuring the water use of every usable unit, separate common space, and landscaping that is expected to use at least 25 gallons of water per day on average for the course of a year, regardless of the overall size of the building. Buildings that have a separate water meter for each unit are exempt.

Also in 2014, Pismo Beach adopted several Water Conservation Incentive Programs to help reduce water consumption and ensure reliable future water supply. On February 2, 2021, the Pismo Beach City Council updated the Water Conservation Incentive Programs list to include the following:

- **Cash for Grass.** This program reimburses residents for each square foot of lawn removed (minimum 300 square feet) and replaced with drought-tolerant landscaping, which is required to have an automatic timer and drip or micro-spray irrigation.
- **Water-Wise Landscaping Program.** This program provides resources for designing and installing water-wise landscaping in San Luis Obispo County, selecting climate-appropriate plants, and irrigation and drainage improvements that will help residents improve their landscaping and protect the watershed.
- **High Efficiency Toilet Rebate Program.** This program provides a one-time rebate for each 3.5-gallon-per-flush or higher toilet replaced with a 1.28-gallon-per-flush or lower toilet.
- **Water Conservation Website.**

In January 2017, Pismo Beach adopted an updated schedule of development impact fees to include new recycled water fees for all new development, redevelopment, and additions to existing buildings that create additional dwelling units or additional non-residential floor area, to help fund the cost of the Central Coast Blue project.

In June 2017, in response to the State of California action to lift the drought emergency and State-mandated water use restrictions throughout the state, Pismo Beach declared a “Normal Water Supply” and adopted an Urgency Ordinance O-2017-003, revising the restrictions associated with each water supply status to conform to State mandates.

On June 1, 2021 Pismo Beach City Council declared a Moderately Restricted Water Supply condition and then on January 18, 2022 City Council declared a Severely Restricted Water Supply condition. The water use restrictions associated with the Severely Restricted Water Supply Condition are:

- Use of water which causes runoff onto adjacent properties, non-irrigated areas, private and public walkways, roadways, gutters, parking lots, or structures is prohibited.
- Outdoor water use for washing vehicles, boats, paved surfaces, buildings, and other similar uses shall be attended and have hand-controlled water devices, which shut off the water immediately when not in use.
- No water shall be used for cleaning driveways, patios, parking lots, sidewalks, streets, or other such uses except as found necessary by the city to protect the public health or safety.
- Outdoor irrigation
  - Outdoor irrigation is prohibited between the hours of ten a.m. and four p.m.
  - Applying water to outdoor landscapes during and within 48 hours after measurable rainfall is prohibited.
  - Irrigation of private and public landscaping, turf areas and gardens is permitted at even-numbered addresses only on Mondays and Thursdays, and at odd-numbered addresses only on Tuesdays and Fridays. All customers are directed to use no more water than necessary to maintain landscaping.
- Restaurants shall serve drinking water only in response to a specific request by a customer.
- Using water in a fountain or other decorative water feature, except where the water is part of a recirculating system, is prohibited.
- Use of potable water for compaction or dust control purposes in construction activities is prohibited.
- Emptying and refilling swimming pools and commercial spas is prohibited except to prevent structural damage and/or to provide for the public health and safety.

In November 2021, Pismo Beach considered adoption of building restrictions such that on May 1st of each year the City’s water supply is evaluated and if the water supply as of May 1st is 15% greater than the previous year’s production, no building restrictions are required. If the water supply is 15% less than the previous year’s production, than a series of other factors are considered that would trigger implementation of Tier I, Tier II, or Tier III restrictions. As of early 2022, the City’s water supply is greater than 15% of the 2021 supply, therefore staff did not recommend immediate implementation of building restrictions.

As required in the 2020 UWMP update (WSC, 2021), Pismo Beach prepared a standalone Water Shortage Contingency Plan (WSCP) that can be updated independently of the UWMP. As droughts and other events impacting water supply occur more frequently and intensely, the WSCP helps prepare for and respond to water shortages. The WSCP includes six standard stages of action tied to actual water shortage conditions in 10 percent increments. Each stage relates a supply reduction range to an associated demand reduction target, which may vary based on the nature of triggering conditions that are dependent on the cause, severity, and



anticipated duration of the water supply shortage. Each year City staff assesses their current water supply and estimates the available future supply based on their SWP Table A allocation, the SMGB groundwater levels, and storage levels at Lopez Lake. If the projected supply will not meet demand, then City staff presents status to the City Council and makes recommendations to enact shortage response actions and building restrictions as needed to accommodate the reduced supply (WSC, 2021).

### Grover Beach

Between 2011 and 2014, Grover Beach declared Stage I and Stage II water shortage conditions and implemented conservation measures including public outreach and education and voluntary prohibitions on water use. In June 2014, Grover Beach declared a Stage III Water Shortage that required all water customers to reduce their water usage by 10 percent. Many of the prohibitions that had previously been voluntary since declaration of the Stage II Water Shortage Declaration became mandatory with the Stage III declaration. The declaration also provided the City with the authority to impose penalties for failure to comply with the water reduction or use prohibitions. Declaration of the Stage III Water Shortage in 2014 made mandatory many of the conservation measures and prohibitions that had previously been implemented prior to 2014. Although the drought declaration was lifted in 2017, all established mandatory water use restrictions remained in effect to encourage conservation. These prohibitions include:

- Washing of sidewalks, driveways, or roadways where air blowers or sweeping provides a reasonable alternative.
- Refilling of private pools except to maintain water levels.
- Planting of turf and other new landscaping, unless it consists of drought-tolerant plants.
- Washing vehicles, boats, etc. without a quick-acting shut-off nozzle on the hose.
- Washing any exterior surfaces unless using a quick-acting shut-off nozzle on the hose.
- Restaurant water service, unless requested.
- Use of potable water for construction purposes, unless no other source of water or method can be used.
- Operation of ornamental fountain or car wash unless water is re-circulated.

In 2020, Grover Beach made changes to its water conservation program through preparation and adoption of a Water Shortage Contingency Plan (WSCP),<sup>29</sup> enacted when water supplies are insufficient to support demand. As droughts and other events impacting water supply occur more frequently and intensely, the WSCP helps prepare for and respond to water shortages. The changes include six stages of action tied to actual water shortage conditions in 10 percent increments. Each stage relates a supply reduction range to an associated demand reduction target, which may vary based on the nature of triggering conditions that are dependent on the cause, severity, and anticipated duration of the water supply shortage. Grover Beach city staff continuously monitor the availability of water supply sources<sup>30</sup> and, if one or more set of triggering conditions are met, the Public Works Director notifies the City Council and recommends declaration of the appropriate stage of water shortage.

In addition to mandatory water use prohibitions, Grover Beach has implemented water conservation incentive programs including the following:

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<sup>29</sup> The WSCP is a component of the City of Grover Beach's 2020 UWMP (MKN, 2021).

<sup>30</sup> Including monitoring of Lopez Lake supplies and monitoring of groundwater availability based on the Deep Well Index value as compared with its threshold value of 7.5 feet NAVD 88.

- Cash for Grass Rebate Program
- Smart Irrigation Controller and Sensor Rebate Program
- Toilet Fixture, Showerhead, and Sink Aerator Retrofit Rebate Program
- Washing Machine Rebate Program

### Oceano CSD

Given the population of its service area, OCSD is not required to prepare an UWMP nor was it required to reduce water consumption as mandated by the Governor for urban water suppliers during the recent drought. Outdoor water use restrictions have been adopted, as required. In April 2015, OCSD adopted a rate increase that included tiered rates to promote water conservation. These rates were reduced in July 2017, upon adoption of the Post Drought Consumption Charges and Supplemental Water Charge Ordinance. In October 2020, the OCSD increased water rates and a new water rate structure was adopted that reduced the number of consumption tiers from five to two. This brought the OCSD rates more closely into conformance with Proposition 218 requirements. The Tier 1 rate is tied directly to the cost of the Lopez Water supply and the Tier 2 rate is tied directly to the cost of the State Water supply. In addition, the new rate structure eliminated the six units of water previously included in the base rate so that customers now pay a consumption charge for every unit of water used, which further promotes conservation.

OCSD pumped only 9 percent of its groundwater entitlement in 2021 and is using Lopez Lake surplus water in addition to its SWP supply. OCSD is preserving its Lopez Lake allocation in storage while increasing deliveries of SWP. Meanwhile, OCSD's conservation efforts continue to realize 20 percent reductions from 2013 levels.

Strategies exist in the event of temporary non-delivery of SWP and Lopez Lake water and other unforeseen circumstances. Current strategies include resumption of groundwater pumping, storage of Lopez Lake allocation, and maximizing deliveries of SWP water as provided in SWP contracts.

## 7.2.8 Evaluate Alternative Sources of Supply

### Strategies:

- Evaluate expanded use of recycled water, including implementation of Central Coast Blue.
- Analyze the capacity of the Lopez Lake and Coastal Branch pipelines to maximize deliveries of surface water. The following analyses have been completed:
  - Lopez Lake Pipeline Capacity Evaluation (WSC, 2011a)
  - Lopez Lake Pipeline Capacity Re-Evaluation (WSC, 2011b)
  - Coastal Branch Capacity Assessment (WSC, 2011a)
  - Lopez Bypass and State Water Delivery Evaluation (WSC, 2017)
- Optimize existing surface water supplies, including surface water storage, through the development of a framework for interagency exchanges and transfers, including SWP and Lopez Lake supplies.
- Maximize Lopez Lake pipeline capacity.

### Discussion:

The NCMA agencies continue to evaluate alternative sources of water supply that could provide a more reliable and sustainable water supply for the NCMA. An expanded portfolio of water supply sources will support sustainable management of the groundwater resource and help to reduce the risk of water shortages. These alternative sources include the following:

- **State Water Project.** OCSD and Pismo Beach are currently SWP customers. Both agencies increased their SWP allocations by securing “drought buffers” to increase the availability of supply during periods of SWP shortfalls. Grover Beach and Arroyo Grande are not SWP customers. However, Arroyo Grande approved a measure in 2016 authorizing the City to purchase SWP water from the SLOFCWCD’s excess entitlement on a temporary basis and only during a declared local water emergency. To date, Arroyo Grande has not declared such an emergency and has not purchased SWP water.
- **Water Recycling.** As discussed in Section 7.2.5, Pismo Beach and the SSLOCSD both prepared RWFPSS to evaluate alternatives for a recycled water program that could provide a supplemental water supply source and improve the water supply reliability for the Pismo Beach and the SSLOCSD member agencies (Arroyo Grande, Grover Beach, and OCSD).

Section 7.2.5 also describes ongoing efforts for Central Coast Blue that will enable the NCMA agencies to produce recycled water to augment their water supplies. Construction of the new facility will allow for the use of recycled water to recharge the groundwater basin and provide a new, drought-proof source of water supply for the area. As conceived, the project includes construction of a distribution system that will inject advanced purified water into the SMGB and will allow the NCMA agencies to increase recharge to the aquifer, improve water supply reliability, and help prevent future occurrences of seawater intrusion.

- **Lopez Lake Expansion.** In 2008, the County sponsored a preliminary assessment of the concept of installing an inflatable rubber dam at the Lopez Dam spillway. Subsequently, the SLOFCWCD CSA 12 and Arroyo Grande, Grover Beach, and Pismo Beach funded a study to further analyze the feasibility of increasing the yield of Lopez Lake by raising the spillway height with an inflatable dam or permanent extension. The study was finalized in 2013 and identified the potential to increase the annual yield from Lopez Lake by 500 AFY with a spillway height increase of 6 feet (Stetson, 2013). The NCMA agencies and Zone 3 are continuing to evaluate other aspects of the project, including impacts on the Habitat Conservation Plan process.
- **Desalination.** In 2006, Arroyo Grande, Grover Beach, and OCSD used Proposition 50 funds to complete a feasibility study on desalination as an additional water supply option for the NCMA. This alternative supply is not considered to be a viable option at this time.

When PG&E announced plans to close its Diablo Canyon Power Plant, previous efforts by the SLOFCWCD to (1) evaluate the potential to expand the existing desalination facility at the PG&E Diablo Canyon Power Plant and (2) connect it to the Lopez Lake pipeline to provide a supplemental water supply for the Zone 3 agencies were terminated.

- **Nacimiento Pipeline Extension.** In 2006, Arroyo Grande, Grover Beach, and OCSD completed an evaluation of a Nacimiento pipeline extension to determine the feasibility of delivery of water from the Nacimiento reservoir to the NCMA. This alternative supply is not considered to be a viable option at this time.

## SECTION 8: References

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## APPENDIX A

NCMA Sentry Well Water Level and Water Quality Data

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## Appendix A: NCMA Sentry Wells Water Level Data



Well	Common Name	Aquifer	Date	Depth to Water (feet)	Surface Completion	RP Description	RP Elev, feet NAVD88	Groundwater Elevation (feet VD88)
32S/12E-24B01	North Beach Shallow	Alluvium	10/5/2021	6.20	Stove Pipe	Top of Steel	13.58	7.38
32S/12E-24B01	North Beach Shallow	Alluvium	7/13/2021	6.15	Stove Pipe	Top of Steel	13.58	7.43
32S/12E-24B01	North Beach Shallow	Alluvium	4/6/2021	6.20	Stove Pipe	Top of Steel	13.58	7.38
32S/12E-24B01	North Beach Shallow	Alluvium	1/6/2021	6.08	Stove Pipe	Top of Steel	13.58	7.5
32S/12E-24B01	North Beach Shallow	Alluvium	10/7/2020	6.27	Stove Pipe	Top of Steel	13.58	7.31
32S/12E-24B01	North Beach Shallow	Alluvium	7/6/2020	5.94	Stove Pipe	Top of Steel	13.58	7.64
32S/12E-24B01	North Beach Shallow	Alluvium	4/17/2020	5.93	Stove Pipe	Top of Steel	13.58	7.65
32S/12E-24B01	North Beach Shallow	Alluvium	1/7/2020	5.80	Stove Pipe	Top of Steel	13.58	7.78
32S/12E-24B01	North Beach Shallow	Alluvium	10/9/2019	6.22	Stove Pipe	Top of Steel	13.58	7.36
32S/12E-24B01	North Beach Shallow	Alluvium	7/9/2019	6.07	Stove Pipe	Top of Steel	13.58	7.51
32S/12E-24B01	North Beach Shallow	Alluvium	4/9/2019	6.40	Stove Pipe	Top of Steel	13.58	7.18
32S/12E-24B01	North Beach Shallow	Alluvium	1/8/2019	5.95	Stove Pipe	Top of Steel	13.58	7.63
32S/12E-24B01	North Beach Shallow	Alluvium	10/9/2018	6.29	Stove Pipe	Top of Steel	13.58	7.29
32S/12E-24B01	North Beach Shallow	Alluvium	7/10/2018	7.00	Stove Pipe	Top of Steel	13.58	6.58
32S/12E-24B01	North Beach Shallow	Alluvium	4/10/2018	6.48	Stove Pipe	Top of Steel	13.58	7.10
32S/12E-24B01	North Beach Shallow	Alluvium	1/10/2018	6.00	Stove Pipe	Top of Steel	13.58	7.58
32S/12E-24B01	North Beach Shallow	Alluvium	10/10/2017	6.12	Stove Pipe	Top of Steel	13.58	7.46
32S/12E-24B01	North Beach Shallow	Alluvium	7/11/2017	6.74	Stove Pipe	Top of Steel	13.58	6.84
32S/12E-24B01	North Beach Shallow	Alluvium	4/11/2017	6.30	Stove Pipe	Top of Steel	13.58	7.28
32S/12E-24B01	North Beach Shallow	Alluvium	1/10/2017	5.54	Stove Pipe	Top of Steel	13.58	8.04
32S/12E-24B01	North Beach Shallow	Alluvium	10/12/2016	6.54	Stove Pipe	Top of Steel	13.58	7.04
32S/12E-24B01	North Beach Shallow	Alluvium	7/19/2016	6.78	Stove Pipe	Top of Steel	13.58	6.80
32S/12E-24B01	North Beach Shallow	Alluvium	4/12/2016	6.35	Stove Pipe	Top of Steel	13.58	7.23
32S/12E-24B01	North Beach Shallow	Alluvium	1/12/2016	5.17	Stove Pipe	Top of Steel	13.58	8.41
32S/12E-24B01	North Beach Shallow	Alluvium	10/13/2015	5.73	Stove Pipe	Top of Steel	13.58	7.85
32S/12E-24B01	North Beach Shallow	Alluvium	7/14/2015	6.06	Stove Pipe	Top of Steel	13.58	7.52
32S/12E-24B01	North Beach Shallow	Alluvium	4/14/2015	6.22	Stove Pipe	Top of Steel	13.58	7.36
32S/12E-24B01	North Beach Shallow	Alluvium	1/13/2015	5.83	Stove Pipe	Top of Steel	13.58	7.75
32S/12E-24B01	North Beach Shallow	Alluvium	10/14/2014	5.76	Stove Pipe	Top of Steel	13.58	7.82
32S/12E-24B01	North Beach Shallow	Alluvium	7/29/2014	5.99	Stove Pipe	Top of Steel	13.58	7.59
32S/12E-24B01	North Beach Shallow	Alluvium	6/4/2014	6.52	Stove Pipe	Top of Steel	13.58	7.06
32S/12E-24B01	North Beach Shallow	Alluvium	4/15/2014	5.95	Stove Pipe	Top of Steel	13.58	7.63
32S/12E-24B01	North Beach Shallow	Alluvium	1/14/2014	5.75	Stove Pipe	Top of Steel	13.58	7.83

## Appendix A: NCMA Sentry Wells Water Level Data



Well	Common Name	Aquifer	Date	Depth to Water (feet)	Surface Completion	RP Description	RP Elev, feet NAVD88	Groundwater Elevation (feet VD88)
32S/12E-24B01	North Beach Shallow	Alluvium	10/14/2013	6.07	Stove Pipe	Top of Steel	13.58	7.51
32S/12E-24B01	North Beach Shallow	Alluvium	7/9/2013	6.09	Stove Pipe	Top of Steel	13.58	7.49
32S/12E-24B01	North Beach Shallow	Alluvium	4/10/2013	7.00	Stove Pipe	Top of Steel	13.58	6.58
32S/12E-24B01	North Beach Shallow	Alluvium	1/14/2013	5.72	Stove Pipe	Top of Steel	13.58	7.86
32S/12E-24B01	North Beach Shallow	Alluvium	10/29/2012	5.92	Stove Pipe	Top of Steel	13.58	7.66
32S/12E-24B01	North Beach Shallow	Alluvium	7/23/2012	5.79	Stove Pipe	Top of Steel	13.58	7.79
32S/12E-24B01	North Beach Shallow	Alluvium	4/18/2012	5.58	Stove Pipe	Top of Steel	13.58	8.00
32S/12E-24B01	North Beach Shallow	Alluvium	1/11/2012	5.72	Stove Pipe	Top of Steel	13.58	7.86
32S/12E-24B01	North Beach Shallow	Alluvium	11/21/2011	5.80	Stove Pipe	Top of Steel	13.58	7.78
32S/12E-24B01	North Beach Shallow	Alluvium	7/26/2011	6.38	Stove Pipe	Top of Steel	13.58	7.20
32S/12E-24B01	North Beach Shallow	Alluvium	4/20/2011	6.40	Stove Pipe	Top of Steel	13.58	7.18
32S/12E-24B01	North Beach Shallow	Alluvium	1/24/2011	5.78	Stove Pipe	Top of Steel	13.58	7.80
32S/12E-24B01	North Beach Shallow	Alluvium	10/21/2010	6.37	Stove Pipe	Top of Steel	13.58	7.21
32S/12E-24B01	North Beach Shallow	Alluvium	7/27/2010	6.48	Stove Pipe	Top of Steel	13.58	7.1
32S/12E-24B01	North Beach Shallow	Alluvium	4/27/2010	3.84	Flush	Top Flush Mount	10.70	6.86
32S/12E-24B01	North Beach Shallow	Alluvium	1/27/2010	3.13	Flush	Top Flush Mount	10.70	7.57
32S/12E-24B01	North Beach Shallow	Alluvium	10/19/2009	2.28	Flush	Top Flush Mount	10.70	8.42
32S/12E-24B01	North Beach Shallow	Alluvium	8/20/2009	3.25	Flush	Top Flush Mount	10.70	7.45
32S/12E-24B01	North Beach Shallow	Alluvium	5/12/2009	3.58	Flush	Top Flush Mount	10.70	7.12
32S/12E-24B01	North Beach Shallow	Alluvium	4/7/2009	1.61	Flush	Top Flush Mount	10.70	9.09
32S/12E-24B01	North Beach Shallow	Alluvium	10/15/2008	4.72	Flush	Top Flush Mount	10.70	5.98
32S/12E-24B01	North Beach Shallow	Alluvium	4/15/2008	2.65	Flush	Top Flush Mount	10.70	8.05
32S/12E-24B01	North Beach Shallow	Alluvium	10/18/2007	5.15	Flush	Top Flush Mount	10.70	5.55
32S/12E-24B01	North Beach Shallow	Alluvium	10/19/2006	0.75	Flush	Top Flush Mount	10.70	9.95
32S/12E-24B01	North Beach Shallow	Alluvium	4/25/2006	3.00	Flush	Top Flush Mount	10.70	7.70
32S/12E-24B01	North Beach Shallow	Alluvium	10/7/2005	4.30	Flush	Top Flush Mount	10.70	6.40
32S/12E-24B01	North Beach Shallow	Alluvium	4/29/2005	2.65	Flush	Top Flush Mount	10.70	8.05
32S/12E-24B01	North Beach Shallow	Alluvium	10/29/2004	4.70	Flush	Top Flush Mount	10.70	6.00
32S/12E-24B01	North Beach Shallow	Alluvium	4/8/2004	0.80	Flush	Top Flush Mount	10.70	9.90
32S/12E-24B01	North Beach Shallow	Alluvium	10/8/2003	1.20	Flush	Top Flush Mount	10.70	9.50
32S/12E-24B01	North Beach Shallow	Alluvium	10/14/2002	3.60	Flush	Top Flush Mount	10.70	7.10
32S/12E-24B01	North Beach Shallow	Alluvium	4/9/2002	0.80	Flush	Top Flush Mount	10.70	9.90
32S/12E-24B01	North Beach Shallow	Alluvium	10/5/2001	2.70	Flush	Top Flush Mount	10.70	8.00

## Appendix A: NCMA Sentry Wells Water Level Data



Well	Common Name	Aquifer	Date	Depth to Water (feet)	Surface Completion	RP Description	RP Elev, feet NAVD88	Groundwater Elevation (feet VD88)
32S/12E-24B01	North Beach Shallow	Alluvium	4/23/2001	2.20	Flush	Top Flush Mount	10.70	8.50
32S/12E-24B01	North Beach Shallow	Alluvium	4/24/2000	3.50	Flush	Top Flush Mount	10.70	7.20
32S/12E-24B01	North Beach Shallow	Alluvium	10/29/1999	3.20	Flush	Top Flush Mount	10.70	7.50
32S/12E-24B01	North Beach Shallow	Alluvium	4/15/1999	1.78	Flush	Top Flush Mount	10.70	8.92
32S/12E-24B01	North Beach Shallow	Alluvium	10/20/1998	2.20	Flush	Top Flush Mount	10.70	8.50
32S/12E-24B01	North Beach Shallow	Alluvium	4/23/1998	1.00	Flush	Top Flush Mount	10.70	9.70
32S/12E-24B01	North Beach Shallow	Alluvium	10/22/1997	3.16	Flush	Top Flush Mount	10.70	7.54
32S/12E-24B01	North Beach Shallow	Alluvium	4/29/1997	3.13	Flush	Top Flush Mount	10.70	7.57
32S/12E-24B01	North Beach Shallow	Alluvium	10/23/1996	4.50	Flush	Top Flush Mount	10.70	6.20
32S/12E-24B01	North Beach Shallow	Alluvium	4/29/1996	3.20	Flush	Top Flush Mount	10.70	7.50
32S/12E-24B01	North Beach Shallow	Alluvium	10/10/1995	3.30	Flush	Top Flush Mount	10.70	7.40
32S/12E-24B01	North Beach Shallow	Alluvium	4/19/1995	1.89	Flush	Top Flush Mount	10.70	8.81
32S/12E-24B01	North Beach Shallow	Alluvium	11/1/1994	4.70	Flush	Top Flush Mount	10.70	6.00
32S/12E-24B01	North Beach Shallow	Alluvium	4/11/1994	3.96	Flush	Top Flush Mount	10.70	6.74
32S/12E-24B01	North Beach Shallow	Alluvium	10/13/1993	3.95	Flush	Top Flush Mount	10.70	6.75
32S/12E-24B01	North Beach Shallow	Alluvium	4/8/1993	2.89	Flush	Top Flush Mount	10.70	7.81
32S/12E-24B01	North Beach Shallow	Alluvium	11/4/1992	3.20	Flush	Top Flush Mount	10.70	7.50
32S/12E-24B01	North Beach Shallow	Alluvium	4/21/1992	3.90	Flush	Top Flush Mount	10.70	6.80
32S/12E-24B01	North Beach Shallow	Alluvium	10/11/1991	4.51	Flush	Top Flush Mount	10.70	6.19
32S/12E-24B01	North Beach Shallow	Alluvium	4/19/1991	4.35	Flush	Top Flush Mount	10.70	6.35
32S/12E-24B01	North Beach Shallow	Alluvium	10/11/1990	4.34	Flush	Top Flush Mount	10.70	6.36
32S/12E-24B01	North Beach Shallow	Alluvium	4/24/1990	4.54	Flush	Top Flush Mount	10.70	6.16
32S/12E-24B01	North Beach Shallow	Alluvium	10/4/1989	3.51	Flush	Top Flush Mount	10.70	7.19
32S/12E-24B01	North Beach Shallow	Alluvium	4/17/1989	4.31	Flush	Top Flush Mount	10.70	6.39
32S/12E-24B01	North Beach Shallow	Alluvium	10/20/1988	4.40	Flush	Top Flush Mount	10.70	6.30
32S/12E-24B01	North Beach Shallow	Alluvium	4/29/1988	4.26	Flush	Top Flush Mount	10.70	6.44
32S/12E-24B01	North Beach Shallow	Alluvium	4/21/1988	4.34	Flush	Top Flush Mount	10.70	6.36
32S/12E-24B01	North Beach Shallow	Alluvium	10/19/1987	4.45	Flush	Top Flush Mount	10.70	6.25
32S/12E-24B01	North Beach Shallow	Alluvium	4/13/1987	3.18	Flush	Top Flush Mount	10.70	7.52
32S/12E-24B01	North Beach Shallow	Alluvium	10/31/1986	3.88	Flush	Top Flush Mount	10.70	6.82
32S/12E-24B01	North Beach Shallow	Alluvium	4/27/1986	4.18	Flush	Top Flush Mount	10.70	6.52
32S/12E-24B01	North Beach Shallow	Alluvium	10/18/1985	3.41	Flush	Top Flush Mount	10.70	7.29
32S/12E-24B01	North Beach Shallow	Alluvium	4/22/1985	2.10	Flush	Top Flush Mount	10.70	8.60



## Appendix A: NCMA Sentry Wells Water Level Data



Well	Common Name	Aquifer	Date	Depth to Water (feet)	Surface Completion	RP Description	RP Elev, feet NAVD88	Groundwater Elevation (feet VD88)
32S/12E-24B01	North Beach Shallow	Alluvium	10/29/1984	2.12	Flush	Top Flush Mount	10.70	8.58
32S/12E-24B01	North Beach Shallow	Alluvium	10/28/1983	1.92	Flush	Top Flush Mount	10.70	8.78
32S/12E-24B01	North Beach Shallow	Alluvium	5/6/1982	2.15	Flush	Top Flush Mount	10.70	8.55
32S/12E-24B01	North Beach Shallow	Alluvium	10/19/1981	2.08	Flush	Top Flush Mount	10.70	8.62
32S/12E-24B01	North Beach Shallow	Alluvium	4/21/1981	2.06	Flush	Top Flush Mount	10.70	8.64
32S/12E-24B01	North Beach Shallow	Alluvium	10/21/1980	2.59	Flush	Top Flush Mount	10.70	8.11
32S/12E-24B01	North Beach Shallow	Alluvium	5/9/1980	2.08	Flush	Top Flush Mount	10.70	8.62
32S/12E-24B01	North Beach Shallow	Alluvium	11/7/1979	2.60	Flush	Top Flush Mount	10.70	8.10
32S/12E-24B01	North Beach Shallow	Alluvium	4/17/1979	2.13	Flush	Top Flush Mount	10.70	8.57
32S/12E-24B01	North Beach Shallow	Alluvium	5/17/1977	2.39	Flush	Top Flush Mount	10.70	8.31
32S/12E-24B01	North Beach Shallow	Alluvium	6/9/1976	14.00	Flush	Top Flush Mount	10.70	-3.30
32S/12E-24B01	North Beach Shallow	Alluvium	5/21/1976	4.00	Flush	Top Flush Mount	10.70	6.70
32S/12E-24B01	North Beach Shallow	Alluvium	1/14/1976	2.00	Flush	Top Flush Mount	10.70	8.70
32S/12E-24B01	North Beach Shallow	Alluvium	7/7/1975	2.00	Flush	Top Flush Mount	10.70	8.70
32S/12E-24B01	North Beach Shallow	Alluvium	4/1/1975	2.08	Flush	Top Flush Mount	10.70	8.62
32S/12E-24B01	North Beach Shallow	Alluvium	6/7/1974	1.00	Flush	Top Flush Mount	10.70	9.70
32S/12E-24B01	North Beach Shallow	Alluvium	4/1/1974	2.00	Flush	Top Flush Mount	10.70	8.70
32S/12E-24B01	North Beach Shallow	Alluvium	9/20/1973	2.16	Flush	Top Flush Mount	10.70	8.54
32S/12E-24B01	North Beach Shallow	Alluvium	6/29/1972	2.57	Flush	Top Flush Mount	10.70	8.13
32S/12E-24B01	North Beach Shallow	Alluvium	2/29/1972	1.00	Flush	Top Flush Mount	10.70	9.70
32S/12E-24B01	North Beach Shallow	Alluvium	2/21/1972	1.45	Flush	Top Flush Mount	10.70	9.25
32S/12E-24B01	North Beach Shallow	Alluvium	11/29/1971	2.36	Flush	Top Flush Mount	10.70	8.34
32S/12E-24B01	North Beach Shallow	Alluvium	8/28/1971	2.25	Flush	Top Flush Mount	10.70	8.45
32S/12E-24B01	North Beach Shallow	Alluvium	6/2/1971	2.59	Flush	Top Flush Mount	10.70	8.11
32S/12E-24B01	North Beach Shallow	Alluvium	3/2/1971	1.81	Flush	Top Flush Mount	10.70	8.89
32S/12E-24B01	North Beach Shallow	Alluvium	12/15/1970	2.42	Flush	Top Flush Mount	10.70	8.28
32S/12E-24B01	North Beach Shallow	Alluvium	8/4/1970	3.00	Flush	Top Flush Mount	10.70	7.70
32S/12E-24B01	North Beach Shallow	Alluvium	6/3/1970	2.30	Flush	Top Flush Mount	10.70	8.40
32S/12E-24B01	North Beach Shallow	Alluvium	3/27/1970	2.16	Flush	Top Flush Mount	10.70	8.54
32S/12E-24B01	North Beach Shallow	Alluvium	1/29/1970	2.23	Flush	Top Flush Mount	10.70	8.47
32S/12E-24B01	North Beach Shallow	Alluvium	10/3/1969	2.55	Flush	Top Flush Mount	10.70	8.15
32S/12E-24B01	North Beach Shallow	Alluvium	7/23/1969	3.00	Flush	Top Flush Mount	10.70	7.70
32S/12E-24B01	North Beach Shallow	Alluvium	6/24/1969	3.00	Flush	Top Flush Mount	10.70	7.70

## Appendix A: NCMA Sentry Wells Water Level Data



Well	Common Name	Aquifer	Date	Depth to Water (feet)	Surface Completion	RP Description	RP Elev, feet NAVD88	Groundwater Elevation (feet VD88)
32S/12E-24B01	North Beach Shallow	Alluvium	5/22/1969	3.00	Flush	Top Flush Mount	10.70	7.70
32S/12E-24B01	North Beach Shallow	Alluvium	4/18/1969	2.13	Flush	Top Flush Mount	10.70	8.57
32S/12E-24B01	North Beach Shallow	Alluvium	1/15/1969	2.71	Flush	Top Flush Mount	10.70	7.99
32S/12E-24B01	North Beach Shallow	Alluvium	12/12/1968	2.81	Flush	Top Flush Mount	10.70	7.89
32S/12E-24B01	North Beach Shallow	Alluvium	11/14/1968	3.00	Flush	Top Flush Mount	10.70	7.70
32S/12E-24B01	North Beach Shallow	Alluvium	10/17/1968	3.47	Flush	Top Flush Mount	10.70	7.23
32S/12E-24B01	North Beach Shallow	Alluvium	9/14/1968	3.64	Flush	Top Flush Mount	10.70	7.06
32S/12E-24B01	North Beach Shallow	Alluvium	8/13/1968	3.23	Flush	Top Flush Mount	10.70	7.47
32S/12E-24B01	North Beach Shallow	Alluvium	7/22/1968	3.68	Flush	Top Flush Mount	10.70	7.02
32S/12E-24B01	North Beach Shallow	Alluvium	6/24/1968	3.70	Flush	Top Flush Mount	10.70	7.00
32S/12E-24B01	North Beach Shallow	Alluvium	5/30/1968	3.69	Flush	Top Flush Mount	10.70	7.01
32S/12E-24B01	North Beach Shallow	Alluvium	4/20/1968	2.84	Flush	Top Flush Mount	10.70	7.86
32S/12E-24B01	North Beach Shallow	Alluvium	3/21/1968	2.99	Flush	Top Flush Mount	10.70	7.71
32S/12E-24B01	North Beach Shallow	Alluvium	2/22/1968	2.67	Flush	Top Flush Mount	10.70	8.03
32S/12E-24B01	North Beach Shallow	Alluvium	1/16/1968	2.34	Flush	Top Flush Mount	10.70	8.36
32S/12E-24B01	North Beach Shallow	Alluvium	12/8/1967	2.66	Flush	Top Flush Mount	10.70	8.04
32S/12E-24B01	North Beach Shallow	Alluvium	11/13/1967	2.99	Flush	Top Flush Mount	10.70	7.71
32S/12E-24B01	North Beach Shallow	Alluvium	10/11/1967	3.86	Flush	Top Flush Mount	10.70	6.84
32S/12E-24B01	North Beach Shallow	Alluvium	9/5/1967	3.35	Flush	Top Flush Mount	10.70	7.35
32S/12E-24B01	North Beach Shallow	Alluvium	8/8/1967	3.57	Flush	Top Flush Mount	10.70	7.13
32S/12E-24B01	North Beach Shallow	Alluvium	7/12/1967	3.69	Flush	Top Flush Mount	10.70	7.01
32S/12E-24B01	North Beach Shallow	Alluvium	6/1/1967	3.20	Flush	Top Flush Mount	10.70	7.50
32S/12E-24B01	North Beach Shallow	Alluvium	5/2/1967	3.10	Flush	Top Flush Mount	10.70	7.60

## Appendix A: NCMA Sentry Wells Water Level Data



Well	Common Name	Aquifer	Date	Depth to Water (feet)	Surface Completion	RP Description	RP Elev, feet NAVD88	Groundwater Elevation (feet VD88)
32S/12E-24B02	North Beach Middle	Paso Robles	10/5/2021	6.56	Stove Pipe	Top of Steel	13.58	7.023333333
32S/12E-24B02	North Beach Middle	Paso Robles	7/13/2021	7.10	Stove Pipe	Top of Steel	13.58	6.48
32S/12E-24B02	North Beach Middle	Paso Robles	4/6/2021	6.25	Stove Pipe	Top of Steel	13.58	7.33
32S/12E-24B02	North Beach Middle	Paso Robles	1/6/2021	6.27	Stove Pipe	Top of Steel	13.58	7.31
32S/12E-24B02	North Beach Middle	Paso Robles	10/7/2020	6.64	Stove Pipe	Top of Steel	13.58	6.94
32S/12E-24B02	North Beach Middle	Paso Robles	7/6/2020	6.35	Stove Pipe	Top of Steel	13.58	7.23
32S/12E-24B02	North Beach Middle	Paso Robles	4/7/2020	5.54	Stove Pipe	Top of Steel	13.58	8.04
32S/12E-24B02	North Beach Middle	Paso Robles	1/7/2020	5.93	Stove Pipe	Top of Steel	13.58	7.65
32S/12E-24B02	North Beach Middle	Paso Robles	10/9/2019	6.52	Stove Pipe	Top of Steel	13.58	7.06
32S/12E-24B02	North Beach Middle	Paso Robles	7/9/2019	6.40	Stove Pipe	Top of Steel	13.58	7.18
32S/12E-24B02	North Beach Middle	Paso Robles	4/9/2019	6.50	Stove Pipe	Top of Steel	13.58	7.08
32S/12E-24B02	North Beach Middle	Paso Robles	1/8/2019	6.00	Stove Pipe	Top of Steel	13.58	7.58
32S/12E-24B02	North Beach Middle	Paso Robles	10/9/2018	6.65	Stove Pipe	Top of Steel	13.58	6.93
32S/12E-24B02	North Beach Middle	Paso Robles	7/10/2018	7.17	Stove Pipe	Top of Steel	13.58	6.41
32S/12E-24B02	North Beach Middle	Paso Robles	4/10/2018	6.02	Stove Pipe	Top of Steel	13.58	7.56
32S/12E-24B02	North Beach Middle	Paso Robles	1/10/2018	5.57	Stove Pipe	Top of Steel	13.58	8.01
32S/12E-24B02	North Beach Middle	Paso Robles	10/10/2017	6.46	Stove Pipe	Top of Steel	13.58	7.12
32S/12E-24B02	North Beach Middle	Paso Robles	7/11/2017	6.93	Stove Pipe	Top of Steel	13.58	6.65
32S/12E-24B02	North Beach Middle	Paso Robles	4/11/2017	6.26	Stove Pipe	Top of Steel	13.58	7.32
32S/12E-24B02	North Beach Middle	Paso Robles	1/10/2017	5.33	Stove Pipe	Top of Steel	13.58	8.25
32S/12E-24B02	North Beach Middle	Paso Robles	10/12/2016	7.05	Stove Pipe	Top of Steel	13.58	6.53
32S/12E-24B02	North Beach Middle	Paso Robles	7/19/2016	7.61	Stove Pipe	Top of Steel	13.58	5.97
32S/12E-24B02	North Beach Middle	Paso Robles	4/12/2016	6.37	Stove Pipe	Top of Steel	13.58	7.21
32S/12E-24B02	North Beach Middle	Paso Robles	1/12/2016	5.51	Stove Pipe	Top of Steel	13.58	8.07
32S/12E-24B02	North Beach Middle	Paso Robles	10/13/2015	6.61	Stove Pipe	Top of Steel	13.58	6.97
32S/12E-24B02	North Beach Middle	Paso Robles	7/14/2015	6.97	Stove Pipe	Top of Steel	13.58	6.61
32S/12E-24B02	North Beach Middle	Paso Robles	4/14/2015	7.13	Stove Pipe	Top of Steel	13.58	6.45
32S/12E-24B02	North Beach Middle	Paso Robles	1/13/2015	6.28	Stove Pipe	Top of Steel	13.58	7.30
32S/12E-24B02	North Beach Middle	Paso Robles	10/14/2014	6.61	Stove Pipe	Top of Steel	13.58	6.97
32S/12E-24B02	North Beach Middle	Paso Robles	7/29/2014	7.05	Stove Pipe	Top of Steel	13.58	6.53
32S/12E-24B02	North Beach Middle	Paso Robles	6/4/2014	8.25	Stove Pipe	Top of Steel	13.58	5.33
32S/12E-24B02	North Beach Middle	Paso Robles	4/15/2014	6.55	Stove Pipe	Top of Steel	13.58	7.03
32S/12E-24B02	North Beach Middle	Paso Robles	1/14/2014	6.34	Stove Pipe	Top of Steel	13.58	7.24

## Appendix A: NCMA Sentry Wells Water Level Data



Well	Common Name	Aquifer	Date	Depth to Water (feet)	Surface Completion	RP Description	RP Elev, feet NAVD88	Groundwater Elevation (feet VD88)
32S/12E-24B02	North Beach Middle	Paso Robles	10/14/2013	7.08	Stove Pipe	Top of Steel	13.58	6.50
32S/12E-24B02	North Beach Middle	Paso Robles	7/9/2013	7.17	Stove Pipe	Top of Steel	13.58	6.41
32S/12E-24B02	North Beach Middle	Paso Robles	4/10/2013	6.33	Stove Pipe	Top of Steel	13.58	7.25
32S/12E-24B02	North Beach Middle	Paso Robles	1/14/2013	5.61	Stove Pipe	Top of Steel	13.58	7.97
32S/12E-24B02	North Beach Middle	Paso Robles	10/29/2012	5.88	Stove Pipe	Top of Steel	13.58	7.7
32S/12E-24B02	North Beach Middle	Paso Robles	7/23/2012	6.12	Stove Pipe	Top of Steel	13.58	7.46
32S/12E-24B02	North Beach Middle	Paso Robles	4/18/2012	5.48	Stove Pipe	Top of Steel	13.58	8.1
32S/12E-24B02	North Beach Middle	Paso Robles	1/11/2012	5.47	Stove Pipe	Top of Steel	13.58	8.11
32S/12E-24B02	North Beach Middle	Paso Robles	11/21/2011	5.69	Stove Pipe	Top of Steel	13.58	7.89
32S/12E-24B02	North Beach Middle	Paso Robles	7/26/2011	6.51	Stove Pipe	Top of Steel	13.58	7.07
32S/12E-24B02	North Beach Middle	Paso Robles	4/20/2011	6.30	Stove Pipe	Top of Steel	13.58	7.28
32S/12E-24B02	North Beach Middle	Paso Robles	1/24/2011	5.69	Stove Pipe	Top of Steel	13.58	7.89
32S/12E-24B02	North Beach Middle	Paso Robles	10/21/2010	6.79	Stove Pipe	Top of Steel	13.58	6.79
32S/12E-24B02	North Beach Middle	Paso Robles	7/27/2010	7.05	Stove Pipe	Top of Steel	13.58	6.53
32S/12E-24B02	North Beach Middle	Paso Robles	4/27/2010	4.34	Flush	Top Flush Mount	10.70	6.36
32S/12E-24B02	North Beach Middle	Paso Robles	1/27/2010	3.38	Flush	Top Flush Mount	10.70	7.32
32S/12E-24B02	North Beach Middle	Paso Robles	10/19/2009	2.26	Flush	Top Flush Mount	10.70	8.44
32S/12E-24B02	North Beach Middle	Paso Robles	8/20/2009	4.09	Flush	Top Flush Mount	10.70	6.61
32S/12E-24B02	North Beach Middle	Paso Robles	5/12/2009	4.74	Flush	Top Flush Mount	10.70	5.96
32S/12E-24B02	North Beach Middle	Paso Robles	10/15/2008	4.54	Flush	Top Flush Mount	10.70	6.16
32S/12E-24B02	North Beach Middle	Paso Robles	4/15/2008	3.17	Flush	Top Flush Mount	10.70	7.53
32S/12E-24B02	North Beach Middle	Paso Robles	10/18/2007	3.75	Flush	Top Flush Mount	10.70	6.95
32S/12E-24B02	North Beach Middle	Paso Robles	4/17/2007	3.34	Flush	Top Flush Mount	10.70	7.36
32S/12E-24B02	North Beach Middle	Paso Robles	10/19/2006	3.40	Flush	Top Flush Mount	10.70	7.30
32S/12E-24B02	North Beach Middle	Paso Robles	4/25/2006	2.65	Flush	Top Flush Mount	10.70	8.05
32S/12E-24B02	North Beach Middle	Paso Robles	10/7/2005	3.10	Flush	Top Flush Mount	10.70	7.60
32S/12E-24B02	North Beach Middle	Paso Robles	4/28/2005	0.92	Flush	Top Flush Mount	10.70	9.78
32S/12E-24B02	North Beach Middle	Paso Robles	10/29/2004	3.00	Flush	Top Flush Mount	10.70	7.70
32S/12E-24B02	North Beach Middle	Paso Robles	4/8/2004	3.50	Flush	Top Flush Mount	10.70	7.20
32S/12E-24B02	North Beach Middle	Paso Robles	10/14/2002	3.00	Flush	Top Flush Mount	10.70	7.70
32S/12E-24B02	North Beach Middle	Paso Robles	4/9/2002	3.30	Flush	Top Flush Mount	10.70	7.40
32S/12E-24B02	North Beach Middle	Paso Robles	10/5/2001	2.40	Flush	Top Flush Mount	10.70	8.30
32S/12E-24B02	North Beach Middle	Paso Robles	4/23/2001	2.80	Flush	Top Flush Mount	10.70	7.90

## Appendix A: NCMA Sentry Wells Water Level Data



Well	Common Name	Aquifer	Date	Depth to Water (feet)	Surface Completion	RP Description	RP Elev, feet NAVD88	Groundwater Elevation (feet VD88)
32S/12E-24B02	North Beach Middle	Paso Robles	4/24/2000	3.40	Flush	Top Flush Mount	10.70	7.30
32S/12E-24B02	North Beach Middle	Paso Robles	10/29/1999	2.90	Flush	Top Flush Mount	10.70	7.80
32S/12E-24B02	North Beach Middle	Paso Robles	4/15/1999	2.30	Flush	Top Flush Mount	10.70	8.40
32S/12E-24B02	North Beach Middle	Paso Robles	10/20/1998	3.20	Flush	Top Flush Mount	10.70	7.50
32S/12E-24B02	North Beach Middle	Paso Robles	4/23/1998	2.30	Flush	Top Flush Mount	10.70	8.40
32S/12E-24B02	North Beach Middle	Paso Robles	10/22/1997	2.70	Flush	Top Flush Mount	10.70	8.00
32S/12E-24B02	North Beach Middle	Paso Robles	4/29/1997	3.59	Flush	Top Flush Mount	10.70	7.11
32S/12E-24B02	North Beach Middle	Paso Robles	10/23/1996	3.68	Flush	Top Flush Mount	10.70	7.02
32S/12E-24B02	North Beach Middle	Paso Robles	4/29/1996	3.20	Flush	Top Flush Mount	10.70	7.50
32S/12E-24B02	North Beach Middle	Paso Robles	10/10/1995	3.80	Flush	Top Flush Mount	10.70	6.90
32S/12E-24B02	North Beach Middle	Paso Robles	4/19/1995	3.39	Flush	Top Flush Mount	10.70	7.31
32S/12E-24B02	North Beach Middle	Paso Robles	11/1/1994	3.88	Flush	Top Flush Mount	10.70	6.82
32S/12E-24B02	North Beach Middle	Paso Robles	4/11/1994	3.54	Flush	Top Flush Mount	10.70	7.16
32S/12E-24B02	North Beach Middle	Paso Robles	10/13/1993	3.49	Flush	Top Flush Mount	10.70	7.21
32S/12E-24B02	North Beach Middle	Paso Robles	4/8/1993	3.23	Flush	Top Flush Mount	10.70	7.47
32S/12E-24B02	North Beach Middle	Paso Robles	11/4/1992	4.60	Flush	Top Flush Mount	10.70	6.10
32S/12E-24B02	North Beach Middle	Paso Robles	4/21/1992	4.35	Flush	Top Flush Mount	10.70	6.35
32S/12E-24B02	North Beach Middle	Paso Robles	10/11/1991	4.86	Flush	Top Flush Mount	10.70	5.84
32S/12E-24B02	North Beach Middle	Paso Robles	4/19/1991	4.22	Flush	Top Flush Mount	10.70	6.48
32S/12E-24B02	North Beach Middle	Paso Robles	10/11/1990	4.66	Flush	Top Flush Mount	10.70	6.04
32S/12E-24B02	North Beach Middle	Paso Robles	4/24/1990	4.54	Flush	Top Flush Mount	10.70	6.16
32S/12E-24B02	North Beach Middle	Paso Robles	10/4/1989	4.31	Flush	Top Flush Mount	10.70	6.39
32S/12E-24B02	North Beach Middle	Paso Robles	4/17/1989	4.13	Flush	Top Flush Mount	10.70	6.57
32S/12E-24B02	North Beach Middle	Paso Robles	10/20/1988	4.40	Flush	Top Flush Mount	10.70	6.30
32S/12E-24B02	North Beach Middle	Paso Robles	4/29/1988	3.86	Flush	Top Flush Mount	10.70	6.84
32S/12E-24B02	North Beach Middle	Paso Robles	4/21/1988	3.93	Flush	Top Flush Mount	10.70	6.77
32S/12E-24B02	North Beach Middle	Paso Robles	10/19/1987	3.97	Flush	Top Flush Mount	10.70	6.73
32S/12E-24B02	North Beach Middle	Paso Robles	4/13/1987	2.68	Flush	Top Flush Mount	10.70	8.02
32S/12E-24B02	North Beach Middle	Paso Robles	10/31/1986	3.70	Flush	Top Flush Mount	10.70	7.00
32S/12E-24B02	North Beach Middle	Paso Robles	4/27/1986	3.65	Flush	Top Flush Mount	10.70	7.05
32S/12E-24B02	North Beach Middle	Paso Robles	10/18/1985	3.50	Flush	Top Flush Mount	10.70	7.20
32S/12E-24B02	North Beach Middle	Paso Robles	4/22/1985	3.30	Flush	Top Flush Mount	10.70	7.40
32S/12E-24B02	North Beach Middle	Paso Robles	10/29/1984	3.26	Flush	Top Flush Mount	10.70	7.44

## Appendix A: NCMA Sentry Wells Water Level Data



Well	Common Name	Aquifer	Date	Depth to Water (feet)	Surface Completion	RP Description	RP Elev, feet NAVD88	Groundwater Elevation (feet VD88)
32S/12E-24B02	North Beach Middle	Paso Robles	10/28/1983	2.68	Flush	Top Flush Mount	10.70	8.02
32S/12E-24B02	North Beach Middle	Paso Robles	5/6/1982	3.05	Flush	Top Flush Mount	10.70	7.65
32S/12E-24B02	North Beach Middle	Paso Robles	10/19/1981	3.51	Flush	Top Flush Mount	10.70	7.19
32S/12E-24B02	North Beach Middle	Paso Robles	4/21/1981	3.04	Flush	Top Flush Mount	10.70	7.66
32S/12E-24B02	North Beach Middle	Paso Robles	10/21/1980	3.50	Flush	Top Flush Mount	10.70	7.20
32S/12E-24B02	North Beach Middle	Paso Robles	5/9/1980	3.51	Flush	Top Flush Mount	10.70	7.19
32S/12E-24B02	North Beach Middle	Paso Robles	11/7/1979	2.72	Flush	Top Flush Mount	10.70	7.98
32S/12E-24B02	North Beach Middle	Paso Robles	4/17/1979	2.90	Flush	Top Flush Mount	10.70	7.80
32S/12E-24B02	North Beach Middle	Paso Robles	12/4/1978	2.55	Flush	Top Flush Mount	10.70	8.15
32S/12E-24B02	North Beach Middle	Paso Robles	5/4/1978	2.00	Flush	Top Flush Mount	10.70	8.70
32S/12E-24B02	North Beach Middle	Paso Robles	11/7/1977	3.45	Flush	Top Flush Mount	10.70	7.25
32S/12E-24B02	North Beach Middle	Paso Robles	5/17/1977	3.52	Flush	Top Flush Mount	10.70	7.18
32S/12E-24B02	North Beach Middle	Paso Robles	6/9/1976	9.89	Flush	Top Flush Mount	10.70	0.81
32S/12E-24B02	North Beach Middle	Paso Robles	1/14/1976	3.00	Flush	Top Flush Mount	10.70	7.70
32S/12E-24B02	North Beach Middle	Paso Robles	7/7/1975	3.00	Flush	Top Flush Mount	10.70	7.70
32S/12E-24B02	North Beach Middle	Paso Robles	4/17/1975	3.00	Flush	Top Flush Mount	10.70	7.70
32S/12E-24B02	North Beach Middle	Paso Robles	6/7/1974	2.00	Flush	Top Flush Mount	10.70	8.70
32S/12E-24B02	North Beach Middle	Paso Robles	9/20/1973	3.32	Flush	Top Flush Mount	10.70	7.38
32S/12E-24B02	North Beach Middle	Paso Robles	6/29/1972	3.05	Flush	Top Flush Mount	10.70	7.65
32S/12E-24B02	North Beach Middle	Paso Robles	3/2/1972	2.80	Flush	Top Flush Mount	10.70	7.90
32S/12E-24B02	North Beach Middle	Paso Robles	2/29/1972	2.62	Flush	Top Flush Mount	10.70	8.08
32S/12E-24B02	North Beach Middle	Paso Robles	11/29/1971	3.00	Flush	Top Flush Mount	10.70	7.70
32S/12E-24B02	North Beach Middle	Paso Robles	8/25/1971	3.40	Flush	Top Flush Mount	10.70	7.30
32S/12E-24B02	North Beach Middle	Paso Robles	6/2/1971	3.10	Flush	Top Flush Mount	10.70	7.60
32S/12E-24B02	North Beach Middle	Paso Robles	12/15/1970	2.65	Flush	Top Flush Mount	10.70	8.05
32S/12E-24B02	North Beach Middle	Paso Robles	8/4/1970	3.19	Flush	Top Flush Mount	10.70	7.51
32S/12E-24B02	North Beach Middle	Paso Robles	6/3/1970	3.17	Flush	Top Flush Mount	10.70	7.53
32S/12E-24B02	North Beach Middle	Paso Robles	3/27/1970	2.70	Flush	Top Flush Mount	10.70	8.00
32S/12E-24B02	North Beach Middle	Paso Robles	1/29/1970	2.62	Flush	Top Flush Mount	10.70	8.08
32S/12E-24B02	North Beach Middle	Paso Robles	10/3/1969	3.33	Flush	Top Flush Mount	10.70	7.37
32S/12E-24B02	North Beach Middle	Paso Robles	7/23/1969	4.00	Flush	Top Flush Mount	10.70	6.70
32S/12E-24B02	North Beach Middle	Paso Robles	6/24/1969	4.00	Flush	Top Flush Mount	10.70	6.70
32S/12E-24B02	North Beach Middle	Paso Robles	5/22/1969	4.00	Flush	Top Flush Mount	10.70	6.70



## Appendix A: NCMA Sentry Wells Water Level Data



Well	Common Name	Aquifer	Date	Depth to Water (feet)	Surface Completion	RP Description	RP Elev, feet NAVD88	Groundwater Elevation (feet VD88)
32S/12E-24B02	North Beach Middle	Paso Robles	4/18/1969	2.58	Flush	Top Flush Mount	10.70	8.12
32S/12E-24B02	North Beach Middle	Paso Robles	1/15/1969	2.55	Flush	Top Flush Mount	10.70	8.15
32S/12E-24B02	North Beach Middle	Paso Robles	12/12/1968	3.00	Flush	Top Flush Mount	10.70	7.70
32S/12E-24B02	North Beach Middle	Paso Robles	11/14/1968	2.89	Flush	Top Flush Mount	10.70	1.97
32S/12E-24B02	North Beach Middle	Paso Robles	10/17/1968	3.26	Flush	Top Flush Mount	10.70	7.44
32S/12E-24B02	North Beach Middle	Paso Robles	9/14/1968	4.25	Flush	Top Flush Mount	10.70	6.45
32S/12E-24B02	North Beach Middle	Paso Robles	8/13/1968	3.52	Flush	Top Flush Mount	10.70	7.18
32S/12E-24B02	North Beach Middle	Paso Robles	7/22/1968	3.65	Flush	Top Flush Mount	10.70	7.05
32S/12E-24B02	North Beach Middle	Paso Robles	6/24/1968	3.50	Flush	Top Flush Mount	10.70	7.20
32S/12E-24B02	North Beach Middle	Paso Robles	5/30/1968	4.65	Flush	Top Flush Mount	10.70	6.05
32S/12E-24B02	North Beach Middle	Paso Robles	4/20/1968	3.05	Flush	Top Flush Mount	10.70	7.65
32S/12E-24B02	North Beach Middle	Paso Robles	3/21/1968	2.51	Flush	Top Flush Mount	10.70	8.19
32S/12E-24B02	North Beach Middle	Paso Robles	2/22/1968	2.32	Flush	Top Flush Mount	10.70	8.38
32S/12E-24B02	North Beach Middle	Paso Robles	1/17/1968	1.75	Flush	Top Flush Mount	10.70	8.95
32S/12E-24B02	North Beach Middle	Paso Robles	12/8/1967	2.45	Flush	Top Flush Mount	10.70	8.25
32S/12E-24B02	North Beach Middle	Paso Robles	11/13/1967	2.95	Flush	Top Flush Mount	10.70	7.75
32S/12E-24B02	North Beach Middle	Paso Robles	10/11/1967	3.70	Flush	Top Flush Mount	10.70	7.00
32S/12E-24B02	North Beach Middle	Paso Robles	9/5/1967	3.21	Flush	Top Flush Mount	10.70	7.49
32S/12E-24B02	North Beach Middle	Paso Robles	8/8/1967	3.34	Flush	Top Flush Mount	10.70	7.36
32S/12E-24B02	North Beach Middle	Paso Robles	7/12/1967	2.71	Flush	Top Flush Mount	10.70	7.99
32S/12E-24B02	North Beach Middle	Paso Robles	6/1/1967	2.20	Flush	Top Flush Mount	10.70	8.50
32S/12E-24B02	North Beach Middle	Paso Robles	5/2/1967	2.20	Flush	Top Flush Mount	10.70	8.50

## Appendix A: NCMA Sentry Wells Water Level Data



Well	Common Name	Aquifer	Date	Depth to Water (feet)	Surface Completion	RP Description	RP Elev, feet NAVD88	Groundwater Elevation (feet VD88)
32S/12E-24B03	North Beach Deep	Careaga	10/5/2021	4.02	Stove Pipe	Top of Steel	13.58	9.56
32S/12E-24B03	North Beach Deep	Careaga	7/13/2021	4.33	Stove Pipe	Top of Steel	13.58	9.25
32S/12E-24B03	North Beach Deep	Careaga	4/6/2021	3.33	Stove Pipe	Top of Steel	13.58	10.25
32S/12E-24B03	North Beach Deep	Careaga	1/6/2021	2.46	Stove Pipe	Top of Steel	13.58	11.12
32S/12E-24B03	North Beach Deep	Careaga	10/7/2020	4.16	Stove Pipe	Top of Steel	13.58	9.42
32S/12E-24B03	North Beach Deep	Careaga	7/6/2020	3.00	Stove Pipe	Top of Steel	13.58	10.58
32S/12E-24B03	North Beach Deep	Careaga	4/7/2020	2.22	Stove Pipe	Top of Steel	13.58	11.36
32S/12E-24B03	North Beach Deep	Careaga	1/7/2020	2.77	Stove Pipe	Top of Steel	13.58	10.81
32S/12E-24B03	North Beach Deep	Careaga	10/9/2019	3.36	Stove Pipe	Top of Steel	13.58	10.22
32S/12E-24B03	North Beach Deep	Careaga	7/9/2019	3.39	Stove Pipe	Top of Steel	13.58	10.19
32S/12E-24B03	North Beach Deep	Careaga	4/9/2019	3.08	Stove Pipe	Top of Steel	13.58	10.50
32S/12E-24B03	North Beach Deep	Careaga	1/8/2019	3.12	Stove Pipe	Top of Steel	13.58	10.46
32S/12E-24B03	North Beach Deep	Careaga	10/9/2018	3.80	Stove Pipe	Top of Steel	13.58	9.78
32S/12E-24B03	North Beach Deep	Careaga	7/10/2018	4.18	Stove Pipe	Top of Steel	13.58	9.40
32S/12E-24B03	North Beach Deep	Careaga	4/10/2018	2.55	Stove Pipe	Top of Steel	13.58	11.03
32S/12E-24B03	North Beach Deep	Careaga	1/10/2018	2.51	Stove Pipe	Top of Steel	13.58	11.07
32S/12E-24B03	North Beach Deep	Careaga	10/10/2017	3.60	Stove Pipe	Top of Steel	13.58	9.98
32S/12E-24B03	North Beach Deep	Careaga	7/11/2017	3.75	Stove Pipe	Top of Steel	13.58	9.83
32S/12E-24B03	North Beach Deep	Careaga	4/11/2017	2.90	Stove Pipe	Top of Steel	13.58	10.68
32S/12E-24B03	North Beach Deep	Careaga	1/10/2017	2.59	Stove Pipe	Top of Steel	13.58	10.99
32S/12E-24B03	North Beach Deep	Careaga	10/12/2016	4.70	Stove Pipe	Top of Steel	13.58	8.88
32S/12E-24B03	North Beach Deep	Careaga	7/19/2016	5.10	Stove Pipe	Top of Steel	13.58	8.48
32S/12E-24B03	North Beach Deep	Careaga	4/12/2016	3.81	Stove Pipe	Top of Steel	13.58	9.77
32S/12E-24B03	North Beach Deep	Careaga	1/12/2016	3.01	Stove Pipe	Top of Steel	13.58	10.57
32S/12E-24B03	North Beach Deep	Careaga	10/13/2015	4.62	Stove Pipe	Top of Steel	13.58	8.96
32S/12E-24B03	North Beach Deep	Careaga	7/14/2015	4.76	Stove Pipe	Top of Steel	13.58	8.82
32S/12E-24B03	North Beach Deep	Careaga	4/14/2015	4.86	Stove Pipe	Top of Steel	13.58	8.72
32S/12E-24B03	North Beach Deep	Careaga	1/13/2015	3.59	Stove Pipe	Top of Steel	13.58	9.99
32S/12E-24B03	North Beach Deep	Careaga	10/14/2014	4.60	Stove Pipe	Top of Steel	13.58	8.98
32S/12E-24B03	North Beach Deep	Careaga	7/29/2014	4.78	Stove Pipe	Top of Steel	13.58	8.80
32S/12E-24B03	North Beach Deep	Careaga	6/4/2014	7.33	Stove Pipe	Top of Steel	13.58	6.25
32S/12E-24B03	North Beach Deep	Careaga	5/5/2014	5.36	Stove Pipe	Top of Steel	13.58	8.22
32S/12E-24B03	North Beach Deep	Careaga	4/15/2014	3.94	Stove Pipe	Top of Steel	13.58	9.64

## Appendix A: NCMA Sentry Wells Water Level Data



Well	Common Name	Aquifer	Date	Depth to Water (feet)	Surface Completion	RP Description	RP Elev, feet NAVD88	Groundwater Elevation (feet VD88)
32S/12E-24B03	North Beach Deep	Careaga	1/14/2014	3.81	Stove Pipe	Top of Steel	13.58	9.77
32S/12E-24B03	North Beach Deep	Careaga	10/14/2013	4.50	Stove Pipe	Top of Steel	13.58	9.08
32S/12E-24B03	North Beach Deep	Careaga	7/9/2013	4.48	Stove Pipe	Top of Steel	13.58	9.1
32S/12E-24B03	North Beach Deep	Careaga	4/10/2013	3.41	Stove Pipe	Top of Steel	13.58	10.17
32S/12E-24B03	North Beach Deep	Careaga	1/14/2013	2.48	Stove Pipe	Top of Steel	13.58	11.1
32S/12E-24B03	North Beach Deep	Careaga	10/29/2012	3.01	Stove Pipe	Top of Steel	13.58	10.57
32S/12E-24B03	North Beach Deep	Careaga	7/23/2012	2.98	Stove Pipe	Top of Steel	13.58	10.6
32S/12E-24B03	North Beach Deep	Careaga	4/18/2012	1.93	Stove Pipe	Top of Steel	13.58	11.65
32S/12E-24B03	North Beach Deep	Careaga	1/12/2012	2.15	Stove Pipe	Top of Steel	13.58	11.43
32S/12E-24B03	North Beach Deep	Careaga	11/21/2011	2.93	Stove Pipe	Top of Steel	13.58	10.65
32S/12E-24B03	North Beach Deep	Careaga	7/26/2011	3.17	Stove Pipe	Top of Steel	13.58	10.41
32S/12E-24B03	North Beach Deep	Careaga	4/20/2011	3.25	Stove Pipe	Top of Steel	13.58	10.33
32S/12E-24B03	North Beach Deep	Careaga	1/24/2011	2.65	Stove Pipe	Top of Steel	13.58	10.93
32S/12E-24B03	North Beach Deep	Careaga	10/21/2010	4.60	Stove Pipe	Top of Steel	13.58	8.98
32S/12E-24B03	North Beach Deep	Careaga	7/27/2010	4.54	Stove Pipe	Top of Steel	13.58	9.04
32S/12E-24B03	North Beach Deep	Careaga	4/27/2010	1.43	Flush	Top Flush Mount	10.70	9.27
32S/12E-24B03	North Beach Deep	Careaga	1/27/2010	0.94	Flush	Top Flush Mount	10.70	9.76
32S/12E-24B03	North Beach Deep	Careaga	10/19/2009	0.81	Flush	Top Flush Mount	10.70	9.89
32S/12E-24B03	North Beach Deep	Careaga	8/19/2009	4.18	Flush	Top Flush Mount	10.70	6.52
32S/12E-24B03	North Beach Deep	Careaga	5/12/2009	3.18	Flush	Top Flush Mount	10.70	7.52
32S/12E-24B03	North Beach Deep	Careaga	10/15/2008	3.13	Flush	Top Flush Mount	10.70	7.57
32S/12E-24B03	North Beach Deep	Careaga	4/15/2008	3.80	Flush	Top Flush Mount	10.70	6.90
32S/12E-24B03	North Beach Deep	Careaga	10/18/2007	5.40	Flush	Top Flush Mount	10.70	5.30
32S/12E-24B03	North Beach Deep	Careaga	4/17/2007	3.80	Flush	Top Flush Mount	10.70	6.90
32S/12E-24B03	North Beach Deep	Careaga	10/19/2006	2.45	Flush	Top Flush Mount	10.70	8.25
32S/12E-24B03	North Beach Deep	Careaga	4/25/2006	0.15	Flush	Top Flush Mount	10.70	10.55
32S/12E-24B03	North Beach Deep	Careaga	10/7/2005	3.20	Flush	Top Flush Mount	10.70	7.50
32S/12E-24B03	North Beach Deep	Careaga	4/28/2005	3.15	Flush	Top Flush Mount	10.70	7.55
32S/12E-24B03	North Beach Deep	Careaga	10/27/2004	4.00	Flush	Top Flush Mount	10.70	6.70
32S/12E-24B03	North Beach Deep	Careaga	4/8/2004	0.90	Flush	Top Flush Mount	10.70	9.80
32S/12E-24B03	North Beach Deep	Careaga	10/14/2002	2.80	Flush	Top Flush Mount	10.70	7.90
32S/12E-24B03	North Beach Deep	Careaga	4/9/2002	2.90	Flush	Top Flush Mount	10.70	7.80
32S/12E-24B03	North Beach Deep	Careaga	10/5/2001	0.20	Flush	Top Flush Mount	10.70	10.50

## Appendix A: NCMA Sentry Wells Water Level Data



Well	Common Name	Aquifer	Date	Depth to Water (feet)	Surface Completion	RP Description	RP Elev, feet NAVD88	Groundwater Elevation (feet VD88)
32S/12E-24B03	North Beach Deep	Careaga	4/23/2001	0.00	Flush	Top Flush Mount	10.70	10.70
32S/12E-24B03	North Beach Deep	Careaga	4/24/2000	2.70	Flush	Top Flush Mount	10.70	8.00
32S/12E-24B03	North Beach Deep	Careaga	10/29/1999	0.00	Flush	Top Flush Mount	10.70	10.70
32S/12E-24B03	North Beach Deep	Careaga	4/15/1999	0.00	Flush	Top Flush Mount	10.70	10.70
32S/12E-24B03	North Beach Deep	Careaga	10/20/1998	1.80	Flush	Top Flush Mount	10.70	8.90
32S/12E-24B03	North Beach Deep	Careaga	10/29/1997	2.15	Flush	Top Flush Mount	10.70	8.55
32S/12E-24B03	North Beach Deep	Careaga	4/29/1997	2.68	Flush	Top Flush Mount	10.70	8.02
32S/12E-24B03	North Beach Deep	Careaga	10/23/1996	3.68	Flush	Top Flush Mount	10.70	7.02
32S/12E-24B03	North Beach Deep	Careaga	4/29/1996	1.60	Flush	Top Flush Mount	10.70	9.10
32S/12E-24B03	North Beach Deep	Careaga	10/10/1995	2.80	Flush	Top Flush Mount	10.70	7.90
32S/12E-24B03	North Beach Deep	Careaga	4/19/1995	0.50	Flush	Top Flush Mount	10.70	10.20
32S/12E-24B03	North Beach Deep	Careaga	11/1/1994	2.95	Flush	Top Flush Mount	10.70	7.75
32S/12E-24B03	North Beach Deep	Careaga	4/11/1994	1.31	Flush	Top Flush Mount	10.70	9.39
32S/12E-24B03	North Beach Deep	Careaga	10/13/1993	2.28	Flush	Top Flush Mount	10.70	8.42
32S/12E-24B03	North Beach Deep	Careaga	4/8/1993	0.00	Flush	Top Flush Mount	10.70	10.70
32S/12E-24B03	North Beach Deep	Careaga	11/4/1992	4.30	Flush	Top Flush Mount	10.70	6.40
32S/12E-24B03	North Beach Deep	Careaga	4/21/1992	1.70	Flush	Top Flush Mount	10.70	9.00
32S/12E-24B03	North Beach Deep	Careaga	10/11/1991	3.60	Flush	Top Flush Mount	10.70	7.10
32S/12E-24B03	North Beach Deep	Careaga	4/19/1991	2.74	Flush	Top Flush Mount	10.70	7.96
32S/12E-24B03	North Beach Deep	Careaga	10/11/1990	2.65	Flush	Top Flush Mount	10.70	8.05
32S/12E-24B03	North Beach Deep	Careaga	4/24/1990	2.39	Flush	Top Flush Mount	10.70	8.31
32S/12E-24B03	North Beach Deep	Careaga	10/4/1989	2.22	Flush	Top Flush Mount	10.70	8.48
32S/12E-24B03	North Beach Deep	Careaga	4/17/1989	2.73	Flush	Top Flush Mount	10.70	7.97
32S/12E-24B03	North Beach Deep	Careaga	10/20/1988	2.62	Flush	Top Flush Mount	10.70	8.08
32S/12E-24B03	North Beach Deep	Careaga	4/29/1988	2.26	Flush	Top Flush Mount	10.70	8.44
32S/12E-24B03	North Beach Deep	Careaga	10/19/1987	3.36	Flush	Top Flush Mount	10.70	7.34
32S/12E-24B03	North Beach Deep	Careaga	4/13/1987	0.00	Flush	Top Flush Mount	10.70	10.70
32S/12E-24B03	North Beach Deep	Careaga	10/31/1986	3.18	Flush	Top Flush Mount	10.70	7.52
32S/12E-24B03	North Beach Deep	Careaga	4/27/1986	3.07	Flush	Top Flush Mount	10.70	7.63
32S/12E-24B03	North Beach Deep	Careaga	10/18/1985	0.82	Flush	Top Flush Mount	10.70	9.88
32S/12E-24B03	North Beach Deep	Careaga	4/22/1985	0.40	Flush	Top Flush Mount	10.70	10.30
32S/12E-24B03	North Beach Deep	Careaga	10/29/1984	1.69	Flush	Top Flush Mount	10.70	9.01
32S/12E-24B03	North Beach Deep	Careaga	10/19/1981	0.00	Flush	Top Flush Mount	10.70	10.70

## Appendix A: NCMA Sentry Wells Water Level Data



Well	Common Name	Aquifer	Date	Depth to Water (feet)	Surface Completion	RP Description	RP Elev, feet NAVD88	Groundwater Elevation (feet VD88)
32S/12E-24B03	North Beach Deep	Careaga	4/21/1981	0.00	Flush	Top Flush Mount	10.70	10.70
32S/12E-24B03	North Beach Deep	Careaga	10/21/1980	0.00	Flush	Top Flush Mount	10.70	10.70
32S/12E-24B03	North Beach Deep	Careaga	5/9/1980	0.00	Flush	Top Flush Mount	10.70	10.70
32S/12E-24B03	North Beach Deep	Careaga	11/7/1979	0.00	Flush	Top Flush Mount	10.70	10.70
32S/12E-24B03	North Beach Deep	Careaga	4/17/1979	0.00	Flush	Top Flush Mount	10.70	10.70
32S/12E-24B03	North Beach Deep	Careaga	12/4/1978	0.00	Flush	Top Flush Mount	10.70	10.70
32S/12E-24B03	North Beach Deep	Careaga	5/4/1978	0.00	Flush	Top Flush Mount	10.70	10.70
32S/12E-24B03	North Beach Deep	Careaga	11/7/1977	0.00	Flush	Top Flush Mount	10.70	10.70
32S/12E-24B03	North Beach Deep	Careaga	5/17/1977	0.00	Flush	Top Flush Mount	10.70	10.70
32S/12E-24B03	North Beach Deep	Careaga	6/9/1976	1.90	Flush	Top Flush Mount	10.70	8.80
32S/12E-24B03	North Beach Deep	Careaga	5/21/1976	1.33	Flush	Top Flush Mount	10.70	9.37
32S/12E-24B03	North Beach Deep	Careaga	1/14/1976	0.00	Flush	Top Flush Mount	10.70	10.70
32S/12E-24B03	North Beach Deep	Careaga	7/7/1975	0.00	Flush	Top Flush Mount	10.70	10.70
32S/12E-24B03	North Beach Deep	Careaga	4/1/1975	0.00	Flush	Top Flush Mount	10.70	10.70
32S/12E-24B03	North Beach Deep	Careaga	6/7/1974	0.00	Flush	Top Flush Mount	10.70	10.70
32S/12E-24B03	North Beach Deep	Careaga	9/20/1973	0.00	Flush	Top Flush Mount	10.70	10.70
32S/12E-24B03	North Beach Deep	Careaga	6/29/1972	0.00	Flush	Top Flush Mount	10.70	10.70
32S/12E-24B03	North Beach Deep	Careaga	2/29/1972	0.00	Flush	Top Flush Mount	10.70	10.70
32S/12E-24B03	North Beach Deep	Careaga	11/29/1971	0.00	Flush	Top Flush Mount	10.70	10.70
32S/12E-24B03	North Beach Deep	Careaga	8/28/1971	0.00	Flush	Top Flush Mount	10.70	10.70
32S/12E-24B03	North Beach Deep	Careaga	6/2/1971	0.00	Flush	Top Flush Mount	10.70	10.70
32S/12E-24B03	North Beach Deep	Careaga	3/2/1971	0.00	Flush	Top Flush Mount	10.70	10.70
32S/12E-24B03	North Beach Deep	Careaga	12/15/1970	0.00	Flush	Top Flush Mount	10.70	10.70
32S/12E-24B03	North Beach Deep	Careaga	8/4/1970	0.00	Flush	Top Flush Mount	10.70	10.70
32S/12E-24B03	North Beach Deep	Careaga	6/3/1970	0.00	Flush	Top Flush Mount	10.70	10.70
32S/12E-24B03	North Beach Deep	Careaga	3/27/1970	0.00	Flush	Top Flush Mount	10.70	10.70
32S/12E-24B03	North Beach Deep	Careaga	1/29/1970	0.00	Flush	Top Flush Mount	10.70	10.70
32S/12E-24B03	North Beach Deep	Careaga	10/3/1969	0.00	Flush	Top Flush Mount	10.70	10.70
32S/12E-24B03	North Beach Deep	Careaga	7/23/1969	0.00	Flush	Top Flush Mount	10.70	10.70
32S/12E-24B03	North Beach Deep	Careaga	6/24/1969	0.00	Flush	Top Flush Mount	10.70	10.70
32S/12E-24B03	North Beach Deep	Careaga	5/22/1969	0.00	Flush	Top Flush Mount	10.70	10.70
32S/12E-24B03	North Beach Deep	Careaga	4/18/1969	0.00	Flush	Top Flush Mount	10.70	10.70
32S/12E-24B03	North Beach Deep	Careaga	2/21/1969	0.00	Flush	Top Flush Mount	10.70	10.70

## Appendix A: NCMA Sentry Wells Water Level Data



Well	Common Name	Aquifer	Date	Depth to Water (feet)	Surface Completion	RP Description	RP Elev, feet NAVD88	Groundwater Elevation (feet VD88)
32S/12E-24B03	North Beach Deep	Careaga	1/15/1969	0.00	Flush	Top Flush Mount	10.70	10.70
32S/12E-24B03	North Beach Deep	Careaga	12/12/1968	0.00	Flush	Top Flush Mount	10.70	10.70
32S/12E-24B03	North Beach Deep	Careaga	11/14/1968	0.00	Flush	Top Flush Mount	10.70	10.70
32S/12E-24B03	North Beach Deep	Careaga	10/17/1968	0.72	Flush	Top Flush Mount	10.70	9.98
32S/12E-24B03	North Beach Deep	Careaga	9/14/1968	0.60	Flush	Top Flush Mount	10.70	10.10
32S/12E-24B03	North Beach Deep	Careaga	8/13/1968	0.28	Flush	Top Flush Mount	10.70	10.42
32S/12E-24B03	North Beach Deep	Careaga	7/22/1968	0.48	Flush	Top Flush Mount	10.70	10.22
32S/12E-24B03	North Beach Deep	Careaga	6/24/1968	0.32	Flush	Top Flush Mount	10.70	10.38
32S/12E-24B03	North Beach Deep	Careaga	5/30/1968	0.38	Flush	Top Flush Mount	10.70	10.32
32S/12E-24B03	North Beach Deep	Careaga	4/20/1968	0.00	Flush	Top Flush Mount	10.70	10.70
32S/12E-24B03	North Beach Deep	Careaga	3/21/1968	0.00	Flush	Top Flush Mount	10.70	10.70
32S/12E-24B03	North Beach Deep	Careaga	2/22/1968	0.00	Flush	Top Flush Mount	10.70	10.70
32S/12E-24B03	North Beach Deep	Careaga	1/17/1968	0.00	Flush	Top Flush Mount	10.70	10.70
32S/12E-24B03	North Beach Deep	Careaga	12/8/1967	0.00	Flush	Top Flush Mount	10.70	10.70
32S/12E-24B03	North Beach Deep	Careaga	11/13/1967	0.00	Flush	Top Flush Mount	10.70	10.70
32S/12E-24B03	North Beach Deep	Careaga	10/11/1967	0.00	Flush	Top Flush Mount	10.70	10.70
32S/12E-24B03	North Beach Deep	Careaga	9/5/1967	0.00	Flush	Top Flush Mount	10.70	10.70
32S/12E-24B03	North Beach Deep	Careaga	8/8/1967	0.00	Flush	Top Flush Mount	10.70	10.70
32S/12E-24B03	North Beach Deep	Careaga	7/12/1967	0.00	Flush	Top Flush Mount	10.70	10.70
32S/12E-24B03	North Beach Deep	Careaga	6/1/1967	0.00	Flush	Top Flush Mount	10.70	10.70
32S/12E-24B03	North Beach Deep	Careaga	5/2/1967	0.00	Flush	Top Flush Mount	10.70	10.70



## Appendix A: NCMA Sentry Wells Water Level Data



Well	Common Name	Aquifer	Date	Depth to Water (feet)	Surface Completion	RP Description	RP Elev, feet NAVD88	Groundwater Elevation (feet VD88)
32S/13E-30F01	Highway 1 Shallow	Alluvium/ Paso Robles	10/5/2021	16.21	Stove Pipe	Top of Steel	23.16	6.954166667
32S/13E-30F01	Highway 1 Shallow	Alluvium/ Paso Robles	7/13/2021	15.36	Stove Pipe	Top of Steel	23.16	7.804166667
32S/13E-30F01	Highway 1 Shallow	Alluvium/ Paso Robles	4/6/2021	14.06	Stove Pipe	Top of Steel	23.16	9.1
32S/13E-30F01	Highway 1 Shallow	Alluvium/ Paso Robles	1/6/2021	14.90	Stove Pipe	Top of Steel	23.16	8.26
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	10/7/2020	14.89	Stove Pipe	Top of Steel	23.16	8.27
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	7/6/2020	13.98	Stove Pipe	Top of Steel	23.16	9.18
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	4/7/2020	13.04	Stove Pipe	Top of Steel	23.16	10.12
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	1/7/2020	13.80	Stove Pipe	Top of Steel	23.16	9.36
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	10/9/2019	14.78	Stove Pipe	Top of Steel	23.16	8.38
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	7/9/2019	13.60	Stove Pipe	Top of Steel	23.16	9.56
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	4/9/2019	13.03	Stove Pipe	Top of Steel	23.16	10.13
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	1/8/2019	14.54	Stove Pipe	Top of Steel	23.16	8.62
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	10/9/2018	15.23	Stove Pipe	Top of Steel	23.16	7.93
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	7/10/2018	14.81	Stove Pipe	Top of Steel	23.16	8.35
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	4/10/2018	14.03	Stove Pipe	Top of Steel	23.16	9.13
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	1/10/2018	14.40	Stove Pipe	Top of Steel	23.16	8.76
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	10/10/2017	14.65	Stove Pipe	Top of Steel	23.16	8.51
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	7/11/2017	13.73	Stove Pipe	Top of Steel	23.16	9.43
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	4/11/2017	13.25	Stove Pipe	Top of Steel	23.16	9.91
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	1/10/2017	13.99	Stove Pipe	Top of Steel	23.16	9.17
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	10/12/2016	17.08	Stove Pipe	Top of Steel	23.16	6.08
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	7/19/2016	16.42	Stove Pipe	Top of Steel	23.16	6.74
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	4/12/2016	14.83	Stove Pipe	Top of Steel	23.16	8.33
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	1/12/2016	15.00	Stove Pipe	Top of Steel	23.16	8.16
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	10/13/2015	17.11	Stove Pipe	Top of Steel	23.16	6.05
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	7/14/2015	16.93	Stove Pipe	Top of Steel	23.16	6.23
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	4/14/2015	16.01	Stove Pipe	Top of Steel	23.16	7.15
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	1/13/2015	15.41	Stove Pipe	Top of Steel	23.16	7.75
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	10/14/2014	17.05	Stove Pipe	Top of Steel	23.16	6.11
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	7/29/2014	17.11	Stove Pipe	Top of Steel	23.16	6.05
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	6/4/2014	16.82	Stove Pipe	Top of Steel	23.16	6.34
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	4/15/2014	15.56	Stove Pipe	Top of Steel	23.16	7.60
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	1/14/2014	16.58	Stove Pipe	Top of Steel	23.16	6.58

## Appendix A: NCMA Sentry Wells Water Level Data



Well	Common Name	Aquifer	Date	Depth to Water (feet)	Surface Completion	RP Description	RP Elev, feet NAVD88	Groundwater Elevation (feet VD88)
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	10/14/2013	17.07	Stove Pipe	Top of Steel	23.16	6.09
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	7/9/2013	16.17	Stove Pipe	Top of Steel	23.16	6.99
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	4/10/2013	14.58	Stove Pipe	Top of Steel	23.16	8.58
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	1/14/2013	14.36	Stove Pipe	Top of Steel	23.16	8.8
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	10/30/2012	14.95	Stove Pipe	Top of Steel	23.16	8.21
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	7/24/2012	14.00	Stove Pipe	Top of Steel	23.16	9.16
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	4/18/2012	13.42	Stove Pipe	Top of Steel	23.16	9.74
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	1/10/2012	13.80	Stove Pipe	Top of Steel	23.16	9.36
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	11/21/2011	13.78	Stove Pipe	Top of Steel	23.16	9.38
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	7/26/2011	13.50	Stove Pipe	Top of Steel	23.16	9.66
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	4/20/2011	12.82	Stove Pipe	Top of Steel	23.16	10.34
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	1/24/2011	13.33	Stove Pipe	Top of Steel	23.16	9.83
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	10/21/2010	16.55	Stove Pipe	Top of Steel	23.16	6.61
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	7/26/2010	15.68	Stove Pipe	Top of Steel	23.16	7.48
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	4/27/2010	11.02	Stove Pipe	Top of Steel	23.16	12.14
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	1/28/2010	12.73	Stove Pipe	Top of Steel	23.16	10.43
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	10/19/2009	14.33	Stove Pipe	Top of Steel	23.16	8.83
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	8/19/2009	14.34	Stove Pipe	Top of Steel	23.16	8.82
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	5/12/2009	12.38	Stove Pipe	Top of Steel	23.16	10.78
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	4/7/2009	11.67	Stove Pipe	Top of Steel	23.16	11.49
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	10/15/2008	15.53	Stove Pipe	Top of Steel	23.16	7.63
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	10/19/2006	12.45	Stove Pipe	Top of Steel	23.16	10.71
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	4/25/2006	11.55	Stove Pipe	Top of Steel	23.16	11.61
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	10/7/2005	12.75	Stove Pipe	Top of Steel	23.16	10.41
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	4/28/2005	10.25	Stove Pipe	Top of Steel	23.16	12.91
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	10/27/2004	14.20	Stove Pipe	Top of Steel	23.16	8.96
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	4/8/2004	10.90	Stove Pipe	Top of Steel	23.16	12.26
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	10/8/2003	14.90	Stove Pipe	Top of Steel	23.16	8.26
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	10/14/2002	14.20	Stove Pipe	Top of Steel	23.16	8.96
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	4/9/2002	10.00	Stove Pipe	Top of Steel	23.16	13.16
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	10/5/2001	11.50	Stove Pipe	Top of Steel	23.16	11.66
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	4/23/2001	8.90	Stove Pipe	Top of Steel	23.16	14.26
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	10/16/2000	11.60	Stove Pipe	Top of Steel	23.16	11.56

## Appendix A: NCMA Sentry Wells Water Level Data



Well	Common Name	Aquifer	Date	Depth to Water (feet)	Surface Completion	RP Description	RP Elev, feet NAVD88	Groundwater Elevation (feet VD88)
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	4/24/2000	10.00	Stove Pipe	Top of Steel	23.16	13.16
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	10/29/1999	11.50	Stove Pipe	Top of Steel	23.16	11.66
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	4/15/1999	8.40	Stove Pipe	Top of Steel	23.16	14.76
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	10/20/1998	10.70	Stove Pipe	Top of Steel	23.16	12.46
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	4/23/1998	8.80	Stove Pipe	Top of Steel	23.16	14.36
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	10/22/1997	12.07	Stove Pipe	Top of Steel	23.16	11.09
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	4/29/1997	10.21	Stove Pipe	Top of Steel	23.16	12.95
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	10/23/1996	11.70	Stove Pipe	Top of Steel	23.16	11.46
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	4/29/1996	10.50	Stove Pipe	Top of Steel	23.16	12.66
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	10/11/1995	11.70	Stove Pipe	Top of Steel	23.16	11.46
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	4/19/1995	9.20	Stove Pipe	Top of Steel	23.16	13.96
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	11/1/1994	12.50	Stove Pipe	Top of Steel	23.16	10.66
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	4/11/1994	10.90	Stove Pipe	Top of Steel	23.16	12.26
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	10/13/1993	11.86	Stove Pipe	Top of Steel	23.16	11.30
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	4/8/1993	10.01	Stove Pipe	Top of Steel	23.16	13.15
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	11/4/1992	12.50	Stove Pipe	Top of Steel	23.16	10.66
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	4/21/1992	10.70	Stove Pipe	Top of Steel	23.16	12.46
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	10/11/1991	13.37	Stove Pipe	Top of Steel	23.16	9.79
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	4/19/1991	12.05	Stove Pipe	Top of Steel	23.16	11.11
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	10/11/1990	14.90	Stove Pipe	Top of Steel	23.16	8.26
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	4/24/1990	12.35	Stove Pipe	Top of Steel	23.16	10.81
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	10/4/1989	13.52	Stove Pipe	Top of Steel	23.16	9.64
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	4/17/1989	11.82	Stove Pipe	Top of Steel	23.16	11.34
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	10/20/1988	13.36	Stove Pipe	Top of Steel	23.16	9.80
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	4/29/1988	11.66	Stove Pipe	Top of Steel	23.16	11.50
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	4/21/1988	11.73	Stove Pipe	Top of Steel	23.16	11.43
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	10/19/1987	13.09	Stove Pipe	Top of Steel	23.16	10.07
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	4/13/1987	11.31	Stove Pipe	Top of Steel	23.16	11.85
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	10/31/1986	12.19	Stove Pipe	Top of Steel	23.16	10.97
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	4/15/1986	11.05	Stove Pipe	Top of Steel	23.16	12.11
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	10/18/1985	13.15	Stove Pipe	Top of Steel	23.16	10.01
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	4/22/1985	11.10	Stove Pipe	Top of Steel	23.16	12.06
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	10/15/1984	11.32	Stove Pipe	Top of Steel	23.16	11.84

## Appendix A: NCMA Sentry Wells Water Level Data



Well	Common Name	Aquifer	Date	Depth to Water (feet)	Surface Completion	RP Description	RP Elev, feet NAVD88	Groundwater Elevation (feet VD88)
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	10/28/1983	10.05	Stove Pipe	Top of Steel	23.16	13.11
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	5/6/1982	10.14	Stove Pipe	Top of Steel	23.16	13.02
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	10/19/1981	11.43	Stove Pipe	Top of Steel	23.16	11.73
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	4/21/1981	10.04	Stove Pipe	Top of Steel	23.16	13.12
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	10/10/1980	11.40	Stove Pipe	Top of Steel	23.16	11.76
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	5/9/1980	10.53	Stove Pipe	Top of Steel	23.16	12.63
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	11/7/1979	11.21	Stove Pipe	Top of Steel	23.16	11.95
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	4/17/1979	10.19	Stove Pipe	Top of Steel	23.16	12.97
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	12/4/1978	10.41	Stove Pipe	Top of Steel	23.16	12.75
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	4/24/1978	9.50	Stove Pipe	Top of Steel	23.16	13.66
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	11/7/1977	12.97	Stove Pipe	Top of Steel	23.16	10.19
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	5/17/1977	12.09	Stove Pipe	Top of Steel	23.16	11.07
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	6/9/1976	12.25	Stove Pipe	Top of Steel	23.16	10.91
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	1/14/1976	11.40	Stove Pipe	Top of Steel	23.16	11.76
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	1/4/1976	11.00	Stove Pipe	Top of Steel	23.16	12.16
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	7/7/1975	13.42	Stove Pipe	Top of Steel	23.16	9.74
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	4/1/1975	10.00	Stove Pipe	Top of Steel	23.16	13.16
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	6/7/1974	10.00	Stove Pipe	Top of Steel	23.16	13.16
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	4/1/1974	10.50	Stove Pipe	Top of Steel	23.16	12.66
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	7/20/1973	11.67	Stove Pipe	Top of Steel	23.16	11.49
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	6/29/1972	16.00	Stove Pipe	Top of Steel	23.16	7.16
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	2/23/1972	10.00	Stove Pipe	Top of Steel	23.16	13.16
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	11/29/1971	11.10	Stove Pipe	Top of Steel	23.16	12.06
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	8/26/1971	11.43	Stove Pipe	Top of Steel	23.16	11.73
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	6/2/1971	10.94	Stove Pipe	Top of Steel	23.16	12.22
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	3/2/1971	10.29	Stove Pipe	Top of Steel	23.16	12.87
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	12/15/1970	10.56	Stove Pipe	Top of Steel	23.16	12.60
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	8/4/1970	19.00	Stove Pipe	Top of Steel	23.16	4.16
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	6/3/1970	14.00	Stove Pipe	Top of Steel	23.16	9.16
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	3/27/1970	12.07	Stove Pipe	Top of Steel	23.16	11.09
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	1/29/1970	11.80	Stove Pipe	Top of Steel	23.16	11.36
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	10/3/1969	14.60	Stove Pipe	Top of Steel	23.16	8.56
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	7/23/1969	13.75	Stove Pipe	Top of Steel	23.16	9.41

## Appendix A: NCMA Sentry Wells Water Level Data



Well	Common Name	Aquifer	Date	Depth to Water (feet)	Surface Completion	RP Description	RP Elev, feet NAVD88	Groundwater Elevation (feet VD88)
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	6/24/1969	12.93	Stove Pipe	Top of Steel	23.16	10.23
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	5/22/1969	12.16	Stove Pipe	Top of Steel	23.16	11.00
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	4/18/1969	11.24	Stove Pipe	Top of Steel	23.16	11.92
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	3/20/1969	10.33	Stove Pipe	Top of Steel	23.16	12.83
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	2/21/1969	11.63	Stove Pipe	Top of Steel	23.16	11.53
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	1/15/1969	13.60	Stove Pipe	Top of Steel	23.16	9.56
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	12/12/1968	15.07	Stove Pipe	Top of Steel	23.16	8.09
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	11/14/1968	16.28	Stove Pipe	Top of Steel	23.16	6.88
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	10/17/1968	17.37	Stove Pipe	Top of Steel	23.16	5.79
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	9/14/1968	18.80	Stove Pipe	Top of Steel	23.16	4.36
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	8/13/1968	17.96	Stove Pipe	Top of Steel	23.16	5.20
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	7/22/1968	17.70	Stove Pipe	Top of Steel	23.16	5.46
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	6/24/1968	16.95	Stove Pipe	Top of Steel	23.16	6.21
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	5/30/1968	5.47	Stove Pipe	Top of Steel	23.16	17.69
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	4/20/1968	13.51	Stove Pipe	Top of Steel	23.16	9.65
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	3/21/1968	12.10	Stove Pipe	Top of Steel	23.16	11.06
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	2/22/1968	12.29	Stove Pipe	Top of Steel	23.16	10.87
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	1/17/1968	12.67	Stove Pipe	Top of Steel	23.16	10.49
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	12/8/1967	13.37	Stove Pipe	Top of Steel	23.16	9.79
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	11/13/1967	15.36	Stove Pipe	Top of Steel	23.16	7.80
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	10/9/1967	15.41	Stove Pipe	Top of Steel	23.16	7.75
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	9/5/1967	15.34	Stove Pipe	Top of Steel	23.16	7.82
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	8/8/1967	15.04	Stove Pipe	Top of Steel	23.16	8.12
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	7/12/1967	14.29	Stove Pipe	Top of Steel	23.16	8.87
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	6/1/1967	13.20	Stove Pipe	Top of Steel	23.16	9.96
32S/13E-30F01	Highway 1 Shallow	Alluvium / Paso Robles	5/2/1967	12.20	Stove Pipe	Top of Steel	23.16	10.96

## Appendix A: NCMA Sentry Wells Water Level Data



Well	Common Name	Aquifer	Date	Depth to Water (feet)	Surface Completion	RP Description	RP Elev, feet NAVD88	Groundwater Elevation (feet VD88)
32S/13E-30F02	Highway 1 Middle	Paso Robles	10/5/2021	16.44	Stove Pipe	Top of Steel	23.16	6.725
32S/13E-30F02	Highway 1 Middle	Paso Robles	7/13/2021	17.10	Stove Pipe	Top of Steel	23.16	6.065
32S/13E-30F02	Highway 1 Middle	Paso Robles	4/6/2021	14.87	Stove Pipe	Top of Steel	23.16	8.29
32S/13E-30F02	Highway 1 Middle	Paso Robles	1/6/2021	15.96	Stove Pipe	Top of Steel	23.16	7.2
32S/13E-30F02	Highway 1 Middle	Paso Robles	10/7/2020	15.80	Stove Pipe	Top of Steel	23.16	7.37
32S/13E-30F02	Highway 1 Middle	Paso Robles	7/6/2020	14.19	Stove Pipe	Top of Steel	23.16	8.98
32S/13E-30F02	Highway 1 Middle	Paso Robles	4/7/2020	14.23	Stove Pipe	Top of Steel	23.16	8.94
32S/13E-30F02	Highway 1 Middle	Paso Robles	1/7/2020	14.99	Stove Pipe	Top of Steel	23.16	8.17
32S/13E-30F02	Highway 1 Middle	Paso Robles	10/9/2019	15.55	Stove Pipe	Top of Steel	23.16	7.61
32S/13E-30F02	Highway 1 Middle	Paso Robles	7/9/2019	14.90	Stove Pipe	Top of Steel	23.16	8.26
32S/13E-30F02	Highway 1 Middle	Paso Robles	4/9/2019	14.87	Stove Pipe	Top of Steel	23.16	8.29
32S/13E-30F02	Highway 1 Middle	Paso Robles	1/8/2019	15.11	Stove Pipe	Top of Steel	23.16	8.05
32S/13E-30F02	Highway 1 Middle	Paso Robles	10/9/2018	15.94	Stove Pipe	Top of Steel	23.16	7.22
32S/13E-30F02	Highway 1 Middle	Paso Robles	7/10/2018	15.90	Stove Pipe	Top of Steel	23.16	7.26
32S/13E-30F02	Highway 1 Middle	Paso Robles	4/10/2018	14.62	Stove Pipe	Top of Steel	23.16	8.54
32S/13E-30F02	Highway 1 Middle	Paso Robles	1/10/2018	14.79	Stove Pipe	Top of Steel	23.16	8.37
32S/13E-30F02	Highway 1 Middle	Paso Robles	10/10/2017	15.45	Stove Pipe	Top of Steel	23.16	7.71
32S/13E-30F02	Highway 1 Middle	Paso Robles	7/11/2017	15.30	Stove Pipe	Top of Steel	23.16	7.86
32S/13E-30F02	Highway 1 Middle	Paso Robles	4/11/2017	14.27	Stove Pipe	Top of Steel	23.16	8.89
32S/13E-30F02	Highway 1 Middle	Paso Robles	1/10/2017	14.53	Stove Pipe	Top of Steel	23.16	8.63
32S/13E-30F02	Highway 1 Middle	Paso Robles	10/12/2016	17.35	Stove Pipe	Top of Steel	23.16	5.81
32S/13E-30F02	Highway 1 Middle	Paso Robles	7/19/2016	17.63	Stove Pipe	Top of Steel	23.16	5.53
32S/13E-30F02	Highway 1 Middle	Paso Robles	4/12/2016	15.98	Stove Pipe	Top of Steel	23.16	7.18
32S/13E-30F02	Highway 1 Middle	Paso Robles	1/12/2016	15.29	Stove Pipe	Top of Steel	23.16	7.87
32S/13E-30F02	Highway 1 Middle	Paso Robles	10/13/2015	17.29	Stove Pipe	Top of Steel	23.16	5.87
32S/13E-30F02	Highway 1 Middle	Paso Robles	7/14/2015	17.44	Stove Pipe	Top of Steel	23.16	5.72
32S/13E-30F02	Highway 1 Middle	Paso Robles	4/14/2015	16.94	Stove Pipe	Top of Steel	23.16	6.22
32S/13E-30F02	Highway 1 Middle	Paso Robles	1/13/2015	16.41	Stove Pipe	Top of Steel	23.16	6.75
32S/13E-30F02	Highway 1 Middle	Paso Robles	10/14/2014	17.33	Stove Pipe	Top of Steel	23.16	5.83
32S/13E-30F02	Highway 1 Middle	Paso Robles	7/29/2014	17.31	Stove Pipe	Top of Steel	23.16	5.85
32S/13E-30F02	Highway 1 Middle	Paso Robles	6/4/2014	18.00	Stove Pipe	Top of Steel	23.16	5.16
32S/13E-30F02	Highway 1 Middle	Paso Robles	4/15/2014	16.27	Stove Pipe	Top of Steel	23.16	6.89
32S/13E-30F02	Highway 1 Middle	Paso Robles	1/14/2014	17.01	Stove Pipe	Top of Steel	23.16	6.15



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Well	Common Name	Aquifer	Date	Depth to Water (feet)	Surface Completion	RP Description	RP Elev, feet NAVD88	Groundwater Elevation (feet VD88)
32S/13E-30F02	Highway 1 Middle	Paso Robles	10/14/2013	17.52	Stove Pipe	Top of Steel	23.16	5.64
32S/13E-30F02	Highway 1 Middle	Paso Robles	7/9/2013	17.15	Stove Pipe	Top of Steel	23.16	6.01
32S/13E-30F02	Highway 1 Middle	Paso Robles	4/10/2013	15.76	Stove Pipe	Top of Steel	23.16	7.4
32S/13E-30F02	Highway 1 Middle	Paso Robles	1/14/2013	15.01	Stove Pipe	Top of Steel	23.16	8.15
32S/13E-30F02	Highway 1 Middle	Paso Robles	10/30/2012	15.27	Stove Pipe	Top of Steel	23.16	7.89
32S/13E-30F02	Highway 1 Middle	Paso Robles	7/24/2012	14.82	Stove Pipe	Top of Steel	23.16	8.34
32S/13E-30F02	Highway 1 Middle	Paso Robles	4/18/2012	14.38	Stove Pipe	Top of Steel	23.16	8.78
32S/13E-30F02	Highway 1 Middle	Paso Robles	1/12/2012	14.31	Stove Pipe	Top of Steel	23.16	8.85
32S/13E-30F02	Highway 1 Middle	Paso Robles	11/21/2011	14.94	Stove Pipe	Top of Steel	23.16	8.22
32S/13E-30F02	Highway 1 Middle	Paso Robles	7/26/2011	14.46	Stove Pipe	Top of Steel	23.16	8.7
32S/13E-30F02	Highway 1 Middle	Paso Robles	4/20/2011	14.23	Stove Pipe	Top of Steel	23.16	8.93
32S/13E-30F02	Highway 1 Middle	Paso Robles	1/24/2011	14.36	Stove Pipe	Top of Steel	23.16	8.80
32S/13E-30F02	Highway 1 Middle	Paso Robles	10/21/2010	7.39	Stove Pipe	Top of Steel	23.16	15.77
32S/13E-30F02	Highway 1 Middle	Paso Robles	7/26/2010	16.21	Stove Pipe	Top of Steel	23.16	6.95
32S/13E-30F02	Highway 1 Middle	Paso Robles	4/27/2010	12.14	Flush	Top Flush Mount	20.36	8.22
32S/13E-30F02	Highway 1 Middle	Paso Robles	1/28/2010	13.09	Flush	Top Flush Mount	20.36	7.27
32S/13E-30F02	Highway 1 Middle	Paso Robles	10/19/2009	14.36	Flush	Top Flush Mount	20.36	6.00
32S/13E-30F02	Highway 1 Middle	Paso Robles	8/19/2009	14.81	Flush	Top Flush Mount	20.36	5.55
32S/13E-30F02	Highway 1 Middle	Paso Robles	5/12/2009	14.34	Flush	Top Flush Mount	20.36	6.02
32S/13E-30F02	Highway 1 Middle	Paso Robles	4/7/2009	12.28	Flush	Top Flush Mount	20.36	8.08
32S/13E-30F02	Highway 1 Middle	Paso Robles	10/15/2008	15.34	Flush	Top Flush Mount	20.36	5.02
32S/13E-30F02	Highway 1 Middle	Paso Robles	4/15/2008	12.40	Flush	Top Flush Mount	20.36	7.96
32S/13E-30F02	Highway 1 Middle	Paso Robles	10/18/2007	15.35	Flush	Top Flush Mount	20.36	5.01
32S/13E-30F02	Highway 1 Middle	Paso Robles	4/17/2007	12.43	Flush	Top Flush Mount	20.36	7.93
32S/13E-30F02	Highway 1 Middle	Paso Robles	10/19/2006	12.85	Flush	Top Flush Mount	20.36	7.51
32S/13E-30F02	Highway 1 Middle	Paso Robles	4/25/2006	9.85	Flush	Top Flush Mount	20.36	10.51
32S/13E-30F02	Highway 1 Middle	Paso Robles	10/7/2005	12.15	Flush	Top Flush Mount	20.36	8.21
32S/13E-30F02	Highway 1 Middle	Paso Robles	4/28/2005	11.35	Flush	Top Flush Mount	20.36	9.01
32S/13E-30F02	Highway 1 Middle	Paso Robles	10/27/2004	14.50	Flush	Top Flush Mount	20.36	5.86
32S/13E-30F02	Highway 1 Middle	Paso Robles	4/8/2004	10.40	Flush	Top Flush Mount	20.36	9.96
32S/13E-30F02	Highway 1 Middle	Paso Robles	10/14/2002	14.30	Flush	Top Flush Mount	20.36	6.06
32S/13E-30F02	Highway 1 Middle	Paso Robles	4/9/2002	11.10	Flush	Top Flush Mount	20.36	9.26
32S/13E-30F02	Highway 1 Middle	Paso Robles	10/5/2001	12.30	Flush	Top Flush Mount	20.36	8.06

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Well	Common Name	Aquifer	Date	Depth to Water (feet)	Surface Completion	RP Description	RP Elev, feet NAVD88	Groundwater Elevation (feet VD88)
32S/13E-30F02	Highway 1 Middle	Paso Robles	4/23/2001	10.10	Flush	Top Flush Mount	20.36	10.26
32S/13E-30F02	Highway 1 Middle	Paso Robles	10/16/2000	12.30	Flush	Top Flush Mount	20.36	8.06
32S/13E-30F02	Highway 1 Middle	Paso Robles	4/24/2000	11.00	Flush	Top Flush Mount	20.36	9.36
32S/13E-30F02	Highway 1 Middle	Paso Robles	10/29/1999	12.20	Flush	Top Flush Mount	20.36	8.16
32S/13E-30F02	Highway 1 Middle	Paso Robles	4/15/1999	10.30	Flush	Top Flush Mount	20.36	10.06
32S/13E-30F02	Highway 1 Middle	Paso Robles	10/20/1998	10.70	Flush	Top Flush Mount	20.36	9.66
32S/13E-30F02	Highway 1 Middle	Paso Robles	4/23/1998	8.30	Flush	Top Flush Mount	20.36	12.06
32S/13E-30F02	Highway 1 Middle	Paso Robles	10/22/1997	12.30	Flush	Top Flush Mount	20.36	8.06
32S/13E-30F02	Highway 1 Middle	Paso Robles	4/29/1997	11.20	Flush	Top Flush Mount	20.36	9.16
32S/13E-30F02	Highway 1 Middle	Paso Robles	10/23/1996	12.05	Flush	Top Flush Mount	20.36	8.31
32S/13E-30F02	Highway 1 Middle	Paso Robles	4/29/1996	10.80	Flush	Top Flush Mount	20.36	9.56
32S/13E-30F02	Highway 1 Middle	Paso Robles	10/11/1995	11.90	Flush	Top Flush Mount	20.36	8.46
32S/13E-30F02	Highway 1 Middle	Paso Robles	4/19/1995	10.05	Flush	Top Flush Mount	20.36	10.31
32S/13E-30F02	Highway 1 Middle	Paso Robles	11/1/1994	13.90	Flush	Top Flush Mount	20.36	6.46
32S/13E-30F02	Highway 1 Middle	Paso Robles	4/11/1994	11.79	Flush	Top Flush Mount	20.36	8.57
32S/13E-30F02	Highway 1 Middle	Paso Robles	10/13/1993	12.76	Flush	Top Flush Mount	20.36	7.60
32S/13E-30F02	Highway 1 Middle	Paso Robles	4/8/1993	10.48	Flush	Top Flush Mount	20.36	9.88
32S/13E-30F02	Highway 1 Middle	Paso Robles	11/4/1992	13.30	Flush	Top Flush Mount	20.36	7.06
32S/13E-30F02	Highway 1 Middle	Paso Robles	4/21/1992	9.45	Flush	Top Flush Mount	20.36	10.91
32S/13E-30F02	Highway 1 Middle	Paso Robles	10/11/1991	13.42	Flush	Top Flush Mount	20.36	6.94
32S/13E-30F02	Highway 1 Middle	Paso Robles	4/19/1991	13.05	Flush	Top Flush Mount	20.36	7.31
32S/13E-30F02	Highway 1 Middle	Paso Robles	10/11/1990	14.71	Flush	Top Flush Mount	20.36	5.65
32S/13E-30F02	Highway 1 Middle	Paso Robles	4/24/1990	13.15	Flush	Top Flush Mount	20.36	7.21
32S/13E-30F02	Highway 1 Middle	Paso Robles	10/4/1989	13.71	Flush	Top Flush Mount	20.36	6.65
32S/13E-30F02	Highway 1 Middle	Paso Robles	4/17/1989	14.50	Flush	Top Flush Mount	20.36	5.86
32S/13E-30F02	Highway 1 Middle	Paso Robles	10/20/1988	14.00	Flush	Top Flush Mount	20.36	6.36
32S/13E-30F02	Highway 1 Middle	Paso Robles	4/29/1988	12.85	Flush	Top Flush Mount	20.36	7.51
32S/13E-30F02	Highway 1 Middle	Paso Robles	4/21/1988	13.23	Flush	Top Flush Mount	20.36	7.13
32S/13E-30F02	Highway 1 Middle	Paso Robles	10/19/1987	13.97	Flush	Top Flush Mount	20.36	6.39
32S/13E-30F02	Highway 1 Middle	Paso Robles	4/13/1987	11.96	Flush	Top Flush Mount	20.36	8.40
32S/13E-30F02	Highway 1 Middle	Paso Robles	10/31/1986	12.56	Flush	Top Flush Mount	20.36	7.80
32S/13E-30F02	Highway 1 Middle	Paso Robles	4/15/1986	11.97	Flush	Top Flush Mount	20.36	8.39
32S/13E-30F02	Highway 1 Middle	Paso Robles	10/18/1985	13.40	Flush	Top Flush Mount	20.36	6.96

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Well	Common Name	Aquifer	Date	Depth to Water (feet)	Surface Completion	RP Description	RP Elev, feet NAVD88	Groundwater Elevation (feet VD88)
32S/13E-30F02	Highway 1 Middle	Paso Robles	4/22/1985	11.80	Flush	Top Flush Mount	20.36	8.56
32S/13E-30F02	Highway 1 Middle	Paso Robles	10/15/1984	11.48	Flush	Top Flush Mount	20.36	8.88
32S/13E-30F02	Highway 1 Middle	Paso Robles	10/28/1983	10.10	Flush	Top Flush Mount	20.36	10.26
32S/13E-30F02	Highway 1 Middle	Paso Robles	5/6/1982	10.95	Flush	Top Flush Mount	20.36	9.41
32S/13E-30F02	Highway 1 Middle	Paso Robles	10/19/1981	11.70	Flush	Top Flush Mount	20.36	8.66
32S/13E-30F02	Highway 1 Middle	Paso Robles	4/21/1981	10.73	Flush	Top Flush Mount	20.36	9.63
32S/13E-30F02	Highway 1 Middle	Paso Robles	10/10/1980	11.75	Flush	Top Flush Mount	20.36	8.61
32S/13E-30F02	Highway 1 Middle	Paso Robles	5/9/1980	11.88	Flush	Top Flush Mount	20.36	8.48
32S/13E-30F02	Highway 1 Middle	Paso Robles	11/7/1979	11.20	Flush	Top Flush Mount	20.36	9.16
32S/13E-30F02	Highway 1 Middle	Paso Robles	4/17/1979	11.25	Flush	Top Flush Mount	20.36	9.11
32S/13E-30F02	Highway 1 Middle	Paso Robles	12/4/1978	10.45	Flush	Top Flush Mount	20.36	9.91
32S/13E-30F02	Highway 1 Middle	Paso Robles	4/24/1978	10.15	Flush	Top Flush Mount	20.36	10.21
32S/13E-30F02	Highway 1 Middle	Paso Robles	11/7/1977	13.65	Flush	Top Flush Mount	20.36	6.71
32S/13E-30F02	Highway 1 Middle	Paso Robles	5/17/1977	13.19	Flush	Top Flush Mount	20.36	7.17
32S/13E-30F02	Highway 1 Middle	Paso Robles	6/9/1976	12.80	Flush	Top Flush Mount	20.36	7.56
32S/13E-30F02	Highway 1 Middle	Paso Robles	1/14/1976	12.00	Flush	Top Flush Mount	20.36	8.36
32S/13E-30F02	Highway 1 Middle	Paso Robles	7/7/1975	12.00	Flush	Top Flush Mount	20.36	8.36
32S/13E-30F02	Highway 1 Middle	Paso Robles	4/1/1975	10.00	Flush	Top Flush Mount	20.36	10.36
32S/13E-30F02	Highway 1 Middle	Paso Robles	6/7/1974	10.94	Flush	Top Flush Mount	20.36	9.42
32S/13E-30F02	Highway 1 Middle	Paso Robles	9/20/1973	11.85	Flush	Top Flush Mount	20.36	8.51
32S/13E-30F02	Highway 1 Middle	Paso Robles	6/29/1972	15.00	Flush	Top Flush Mount	20.36	5.36
32S/13E-30F02	Highway 1 Middle	Paso Robles	2/23/1972	11.00	Flush	Top Flush Mount	20.36	9.36
32S/13E-30F02	Highway 1 Middle	Paso Robles	11/29/1971	12.35	Flush	Top Flush Mount	20.36	8.01
32S/13E-30F02	Highway 1 Middle	Paso Robles	8/26/1971	12.10	Flush	Top Flush Mount	20.36	8.26
32S/13E-30F02	Highway 1 Middle	Paso Robles	6/2/1971	12.15	Flush	Top Flush Mount	20.36	8.21
32S/13E-30F02	Highway 1 Middle	Paso Robles	3/2/1971	11.35	Flush	Top Flush Mount	20.36	9.01
32S/13E-30F02	Highway 1 Middle	Paso Robles	12/15/1970	11.39	Flush	Top Flush Mount	20.36	8.97
32S/13E-30F02	Highway 1 Middle	Paso Robles	6/3/1970	14.81	Flush	Top Flush Mount	20.36	5.55
32S/13E-30F02	Highway 1 Middle	Paso Robles	3/27/1970	13.65	Flush	Top Flush Mount	20.36	6.71
32S/13E-30F02	Highway 1 Middle	Paso Robles	1/29/1970	12.72	Flush	Top Flush Mount	20.36	7.64
32S/13E-30F02	Highway 1 Middle	Paso Robles	10/3/1969	14.81	Flush	Top Flush Mount	20.36	5.55
32S/13E-30F02	Highway 1 Middle	Paso Robles	7/23/1969	14.90	Flush	Top Flush Mount	20.36	5.46
32S/13E-30F02	Highway 1 Middle	Paso Robles	6/24/1969	13.99	Flush	Top Flush Mount	20.36	6.37

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Well	Common Name	Aquifer	Date	Depth to Water (feet)	Surface Completion	RP Description	RP Elev, feet NAVD88	Groundwater Elevation (feet VD88)
32S/13E-30F02	Highway 1 Middle	Paso Robles	5/22/1969	13.83	Flush	Top Flush Mount	20.36	6.53
32S/13E-30F02	Highway 1 Middle	Paso Robles	4/18/1969	12.78	Flush	Top Flush Mount	20.36	7.58
32S/13E-30F02	Highway 1 Middle	Paso Robles	3/20/1969	12.08	Flush	Top Flush Mount	20.36	8.28
32S/13E-30F02	Highway 1 Middle	Paso Robles	2/21/1969	12.62	Flush	Top Flush Mount	20.36	7.74
32S/13E-30F02	Highway 1 Middle	Paso Robles	1/15/1969	14.92	Flush	Top Flush Mount	20.36	5.44
32S/13E-30F02	Highway 1 Middle	Paso Robles	11/14/1968	16.19	Flush	Top Flush Mount	20.36	4.17
32S/13E-30F02	Highway 1 Middle	Paso Robles	10/17/1968	17.30	Flush	Top Flush Mount	20.36	3.06
32S/13E-30F02	Highway 1 Middle	Paso Robles	9/14/1968	18.18	Flush	Top Flush Mount	20.36	2.18
32S/13E-30F02	Highway 1 Middle	Paso Robles	8/13/1968	17.40	Flush	Top Flush Mount	20.36	2.96
32S/13E-30F02	Highway 1 Middle	Paso Robles	7/22/1968	17.37	Flush	Top Flush Mount	20.36	2.99
32S/13E-30F02	Highway 1 Middle	Paso Robles	6/24/1968	17.17	Flush	Top Flush Mount	20.36	3.19
32S/13E-30F02	Highway 1 Middle	Paso Robles	5/30/1968	16.94	Flush	Top Flush Mount	20.36	3.42
32S/13E-30F02	Highway 1 Middle	Paso Robles	4/20/1968	15.24	Flush	Top Flush Mount	20.36	5.12
32S/13E-30F02	Highway 1 Middle	Paso Robles	3/21/1968	14.70	Flush	Top Flush Mount	20.36	5.66
32S/13E-30F02	Highway 1 Middle	Paso Robles	2/22/1968	13.85	Flush	Top Flush Mount	20.36	6.51
32S/13E-30F02	Highway 1 Middle	Paso Robles	1/17/1968	13.32	Flush	Top Flush Mount	20.36	7.04
32S/13E-30F02	Highway 1 Middle	Paso Robles	12/22/1967	13.99	Flush	Top Flush Mount	20.36	6.37
32S/13E-30F02	Highway 1 Middle	Paso Robles	11/13/1967	15.77	Flush	Top Flush Mount	20.36	4.59
32S/13E-30F02	Highway 1 Middle	Paso Robles	10/9/1967	14.98	Flush	Top Flush Mount	20.36	5.38
32S/13E-30F02	Highway 1 Middle	Paso Robles	9/5/1967	15.32	Flush	Top Flush Mount	20.36	5.04
32S/13E-30F02	Highway 1 Middle	Paso Robles	8/8/1967	15.65	Flush	Top Flush Mount	20.36	4.71
32S/13E-30F02	Highway 1 Middle	Paso Robles	7/12/1967	14.94	Flush	Top Flush Mount	20.36	5.42
32S/13E-30F02	Highway 1 Middle	Paso Robles	6/1/1967	14.50	Flush	Top Flush Mount	20.36	5.86
32S/13E-30F02	Highway 1 Middle	Paso Robles	5/2/1967	13.40	Flush	Top Flush Mount	20.36	6.96

## Appendix A: NCMA Sentry Wells Water Level Data



Well	Common Name	Aquifer	Date	Depth to Water (feet)	Surface Completion	RP Description	RP Elev, feet NAVD88	Groundwater Elevation (feet VD88)
32S/13E-30F03	Highway 1 Deep	Careaga	10/5/2021	16.64	Stove Pipe	Top of Steel	23.16	6.52
32S/13E-30F03	Highway 1 Deep	Careaga	7/13/2021	15.11	Stove Pipe	Top of Steel	23.16	8.05
32S/13E-30F03	Highway 1 Deep	Careaga	4/6/2021	14.09	Stove Pipe	Top of Steel	23.16	9.07
32S/13E-30F03	Highway 1 Deep	Careaga	1/6/2021	14.04	Stove Pipe	Top of Steel	23.16	9.12
32S/13E-30F03	Highway 1 Deep	Careaga	10/7/2020	16.15	Stove Pipe	Top of Steel	23.16	7.01
32S/13E-30F03	Highway 1 Deep	Careaga	7/6/2020	13.68	Stove Pipe	Top of Steel	23.16	9.48
32S/13E-30F03	Highway 1 Deep	Careaga	4/7/2020	11.19	Stove Pipe	Top of Steel	23.16	11.97
32S/13E-30F03	Highway 1 Deep	Careaga	1/7/2020	12.13	Stove Pipe	Top of Steel	23.16	11.03
32S/13E-30F03	Highway 1 Deep	Careaga	10/9/2019	14.40	Stove Pipe	Top of Steel	23.16	8.76
32S/13E-30F03	Highway 1 Deep	Careaga	7/9/2019	13.38	Stove Pipe	Top of Steel	23.16	9.78
32S/13E-30F03	Highway 1 Deep	Careaga	4/9/2019	12.55	Stove Pipe	Top of Steel	23.16	10.61
32S/13E-30F03	Highway 1 Deep	Careaga	1/8/2019	14.27	Stove Pipe	Top of Steel	23.16	8.89
32S/13E-30F03	Highway 1 Deep	Careaga	10/9/2018	15.48	Stove Pipe	Top of Steel	23.16	7.68
32S/13E-30F03	Highway 1 Deep	Careaga	7/10/2018	16.11	Stove Pipe	Top of Steel	23.16	7.05
32S/13E-30F03	Highway 1 Deep	Careaga	4/10/2018	12.16	Stove Pipe	Top of Steel	23.16	11.00
32S/13E-30F03	Highway 1 Deep	Careaga	1/10/2018	12.85	Stove Pipe	Top of Steel	23.16	10.31
32S/13E-30F03	Highway 1 Deep	Careaga	10/10/2017	14.70	Stove Pipe	Top of Steel	23.16	8.46
32S/13E-30F03	Highway 1 Deep	Careaga	7/11/2017	13.64	Stove Pipe	Top of Steel	23.16	9.52
32S/13E-30F03	Highway 1 Deep	Careaga	4/11/2017	12.36	Stove Pipe	Top of Steel	23.16	10.80
32S/13E-30F03	Highway 1 Deep	Careaga	1/10/2017	14.25	Stove Pipe	Top of Steel	23.16	8.91
32S/13E-30F03	Highway 1 Deep	Careaga	10/12/2016	17.82	Stove Pipe	Top of Steel	23.16	5.34
32S/13E-30F03	Highway 1 Deep	Careaga	7/19/2016	17.22	Stove Pipe	Top of Steel	23.16	5.94
32S/13E-30F03	Highway 1 Deep	Careaga	4/12/2016	14.90	Stove Pipe	Top of Steel	23.16	8.26
32S/13E-30F03	Highway 1 Deep	Careaga	1/12/2016	14.84	Stove Pipe	Top of Steel	23.16	8.32
32S/13E-30F03	Highway 1 Deep	Careaga	10/13/2015	18.87	Stove Pipe	Top of Steel	23.16	4.29
32S/13E-30F03	Highway 1 Deep	Careaga	7/14/2015	18.87	Stove Pipe	Top of Steel	23.16	4.29
32S/13E-30F03	Highway 1 Deep	Careaga	4/14/2015	17.92	Stove Pipe	Top of Steel	23.16	5.24
32S/13E-30F03	Highway 1 Deep	Careaga	1/13/2015	14.13	Stove Pipe	Top of Steel	23.16	9.03
32S/13E-30F03	Highway 1 Deep	Careaga	10/14/2014	18.98	Stove Pipe	Top of Steel	23.16	4.18
32S/13E-30F03	Highway 1 Deep	Careaga	7/29/2014	18.62	Stove Pipe	Top of Steel	23.16	4.54
32S/13E-30F03	Highway 1 Deep	Careaga	6/4/2014	22.27	Stove Pipe	Top of Steel	23.16	0.89
32S/13E-30F03	Highway 1 Deep	Careaga	5/5/2014	21.34	Stove Pipe	Top of Steel	23.16	1.82
32S/13E-30F03	Highway 1 Deep	Careaga	4/15/2014	16.14	Stove Pipe	Top of Steel	23.16	7.02

## Appendix A: NCMA Sentry Wells Water Level Data



Well	Common Name	Aquifer	Date	Depth to Water (feet)	Surface Completion	RP Description	RP Elev, feet NAVD88	Groundwater Elevation (feet VD88)
32S/13E-30F03	Highway 1 Deep	Careaga	1/14/2014	15.35	Stove Pipe	Top of Steel	23.16	7.81
32S/13E-30F03	Highway 1 Deep	Careaga	10/14/2013	17.30	Stove Pipe	Top of Steel	23.16	5.86
32S/13E-30F03	Highway 1 Deep	Careaga	7/9/2013	16.61	Stove Pipe	Top of Steel	23.16	6.55
32S/13E-30F03	Highway 1 Deep	Careaga	4/10/2013	14.69	Stove Pipe	Top of Steel	23.16	8.47
32S/13E-30F03	Highway 1 Deep	Careaga	1/14/2013	12.62	Stove Pipe	Top of Steel	23.16	10.54
32S/13E-30F03	Highway 1 Deep	Careaga	10/30/2012	14.61	Stove Pipe	Top of Steel	23.16	8.55
32S/13E-30F03	Highway 1 Deep	Careaga	7/24/2012	14.50	Stove Pipe	Top of Steel	23.16	8.66
32S/13E-30F03	Highway 1 Deep	Careaga	4/18/2012	10.43	Stove Pipe	Top of Steel	23.16	12.73
32S/13E-30F03	Highway 1 Deep	Careaga	1/12/2012	12.37	Stove Pipe	Top of Steel	23.16	10.79
32S/13E-30F03	Highway 1 Deep	Careaga	11/21/2011	13.24	Stove Pipe	Top of Steel	23.16	9.92
32S/13E-30F03	Highway 1 Deep	Careaga	7/26/2011	14.22	Stove Pipe	Top of Steel	23.16	8.94
32S/13E-30F03	Highway 1 Deep	Careaga	4/20/2011	12.51	Stove Pipe	Top of Steel	23.16	10.65
32S/13E-30F03	Highway 1 Deep	Careaga	1/24/2011	12.67	Stove Pipe	Top of Steel	23.16	10.49
32S/13E-30F03	Highway 1 Deep	Careaga	10/21/2010	6.62	Stove Pipe	Top of Steel	23.16	16.54
32S/13E-30F03	Highway 1 Deep	Careaga	7/26/2010	17.32	Stove Pipe	Top of Steel	23.16	5.84
32S/13E-30F03	Highway 1 Deep	Careaga	4/27/2010	11.38	Flush	Top Flush Mount	20.36	8.98
32S/13E-30F03	Highway 1 Deep	Careaga	1/28/2010	10.98	Flush	Top Flush Mount	20.36	9.38
32S/13E-30F03	Highway 1 Deep	Careaga	10/19/2009	14.18	Flush	Top Flush Mount	20.36	6.18
32S/13E-30F03	Highway 1 Deep	Careaga	8/19/2009	20.23	Flush	Top Flush Mount	20.36	0.13
32S/13E-30F03	Highway 1 Deep	Careaga	5/12/2009	17.68	Flush	Top Flush Mount	20.36	2.68
32S/13E-30F03	Highway 1 Deep	Careaga	10/15/2008	22.52	Flush	Top Flush Mount	20.36	-2.16
32S/13E-30F03	Highway 1 Deep	Careaga	4/15/2008	17.86	Flush	Top Flush Mount	20.36	2.50
32S/13E-30F03	Highway 1 Deep	Careaga	10/18/2007	22.35	Flush	Top Flush Mount	20.36	-1.99
32S/13E-30F03	Highway 1 Deep	Careaga	4/17/2007	21.75	Flush	Top Flush Mount	20.36	-1.39
32S/13E-30F03	Highway 1 Deep	Careaga	10/19/2006	13.65	Flush	Top Flush Mount	20.36	6.71
32S/13E-30F03	Highway 1 Deep	Careaga	4/26/2006	10.45	Flush	Top Flush Mount	20.36	9.91
32S/13E-30F03	Highway 1 Deep	Careaga	10/7/2005	14.65	Flush	Top Flush Mount	20.36	5.71
32S/13E-30F03	Highway 1 Deep	Careaga	4/28/2005	13.40	Flush	Top Flush Mount	20.36	6.96
32S/13E-30F03	Highway 1 Deep	Careaga	10/27/2004	20.00	Flush	Top Flush Mount	20.36	0.36
32S/13E-30F03	Highway 1 Deep	Careaga	4/8/2004	13.90	Flush	Top Flush Mount	20.36	6.46
32S/13E-30F03	Highway 1 Deep	Careaga	10/14/2002	16.10	Flush	Top Flush Mount	20.36	4.26
32S/13E-30F03	Highway 1 Deep	Careaga	4/9/2002	13.50	Flush	Top Flush Mount	20.36	6.86
32S/13E-30F03	Highway 1 Deep	Careaga	10/5/2001	13.40	Flush	Top Flush Mount	20.36	6.96



## Appendix A: NCMA Sentry Wells Water Level Data



Well	Common Name	Aquifer	Date	Depth to Water (feet)	Surface Completion	RP Description	RP Elev, feet NAVD88	Groundwater Elevation (feet VD88)
32S/13E-30F03	Highway 1 Deep	Careaga	4/23/2001	8.10	Flush	Top Flush Mount	20.36	12.26
32S/13E-30F03	Highway 1 Deep	Careaga	10/16/2000	12.10	Flush	Top Flush Mount	20.36	8.26
32S/13E-30F03	Highway 1 Deep	Careaga	4/24/2000	16.20	Flush	Top Flush Mount	20.36	4.16
32S/13E-30F03	Highway 1 Deep	Careaga	10/29/1999	11.50	Flush	Top Flush Mount	20.36	8.86
32S/13E-30F03	Highway 1 Deep	Careaga	4/15/1999	7.09	Flush	Top Flush Mount	20.36	13.27
32S/13E-30F03	Highway 1 Deep	Careaga	10/20/1998	14.70	Flush	Top Flush Mount	20.36	5.66
32S/13E-30F03	Highway 1 Deep	Careaga	4/22/1998	8.75	Flush	Top Flush Mount	20.36	11.61
32S/13E-30F03	Highway 1 Deep	Careaga	10/22/1997	17.86	Flush	Top Flush Mount	20.36	2.50
32S/13E-30F03	Highway 1 Deep	Careaga	4/29/1997	17.86	Flush	Top Flush Mount	20.36	2.50
32S/13E-30F03	Highway 1 Deep	Careaga	10/23/1996	19.34	Flush	Top Flush Mount	20.36	1.02
32S/13E-30F03	Highway 1 Deep	Careaga	4/29/1996	16.20	Flush	Top Flush Mount	20.36	4.16
32S/13E-30F03	Highway 1 Deep	Careaga	10/11/1995	23.00	Flush	Top Flush Mount	20.36	-2.64
32S/13E-30F03	Highway 1 Deep	Careaga	4/19/1995	11.60	Flush	Top Flush Mount	20.36	8.76
32S/13E-30F03	Highway 1 Deep	Careaga	11/1/1994	17.60	Flush	Top Flush Mount	20.36	2.76
32S/13E-30F03	Highway 1 Deep	Careaga	4/11/1994	14.05	Flush	Top Flush Mount	20.36	6.31
32S/13E-30F03	Highway 1 Deep	Careaga	10/13/1993	17.28	Flush	Top Flush Mount	20.36	3.08
32S/13E-30F03	Highway 1 Deep	Careaga	4/8/1993	10.25	Flush	Top Flush Mount	20.36	10.11
32S/13E-30F03	Highway 1 Deep	Careaga	11/4/1992	18.30	Flush	Top Flush Mount	20.36	2.06
32S/13E-30F03	Highway 1 Deep	Careaga	4/21/1992	15.20	Flush	Top Flush Mount	20.36	5.16
32S/13E-30F03	Highway 1 Deep	Careaga	10/11/1991	20.02	Flush	Top Flush Mount	20.36	0.34
32S/13E-30F03	Highway 1 Deep	Careaga	4/19/1991	16.82	Flush	Top Flush Mount	20.36	3.54
32S/13E-30F03	Highway 1 Deep	Careaga	10/11/1990	18.12	Flush	Top Flush Mount	20.36	2.24
32S/13E-30F03	Highway 1 Deep	Careaga	4/24/1990	15.03	Flush	Top Flush Mount	20.36	5.33
32S/13E-30F03	Highway 1 Deep	Careaga	10/4/1989	15.96	Flush	Top Flush Mount	20.36	4.40
32S/13E-30F03	Highway 1 Deep	Careaga	4/17/1989	16.40	Flush	Top Flush Mount	20.36	3.96
32S/13E-30F03	Highway 1 Deep	Careaga	10/20/1988	17.03	Flush	Top Flush Mount	20.36	3.33
32S/13E-30F03	Highway 1 Deep	Careaga	4/29/1988	14.70	Flush	Top Flush Mount	20.36	5.66
32S/13E-30F03	Highway 1 Deep	Careaga	10/19/1987	18.77	Flush	Top Flush Mount	20.36	1.59
32S/13E-30F03	Highway 1 Deep	Careaga	4/13/1987	12.89	Flush	Top Flush Mount	20.36	7.47
32S/13E-30F03	Highway 1 Deep	Careaga	10/31/1986	19.05	Flush	Top Flush Mount	20.36	1.31
32S/13E-30F03	Highway 1 Deep	Careaga	4/15/1986	15.83	Flush	Top Flush Mount	20.36	4.53
32S/13E-30F03	Highway 1 Deep	Careaga	10/18/1985	15.23	Flush	Top Flush Mount	20.36	5.13
32S/13E-30F03	Highway 1 Deep	Careaga	4/22/1985	12.00	Flush	Top Flush Mount	20.36	8.36

## Appendix A: NCMA Sentry Wells Water Level Data



Well	Common Name	Aquifer	Date	Depth to Water (feet)	Surface Completion	RP Description	RP Elev, feet NAVD88	Groundwater Elevation (feet VD88)
32S/13E-30F03	Highway 1 Deep	Careaga	10/15/1984	16.88	Flush	Top Flush Mount	20.36	3.48
32S/13E-30F03	Highway 1 Deep	Careaga	10/27/1983	7.48	Flush	Top Flush Mount	20.36	12.88
32S/13E-30F03	Highway 1 Deep	Careaga	5/6/1982	9.15	Flush	Top Flush Mount	20.36	11.21
32S/13E-30F03	Highway 1 Deep	Careaga	10/19/1981	11.12	Flush	Top Flush Mount	20.36	9.24
32S/13E-30F03	Highway 1 Deep	Careaga	4/21/1981	6.83	Flush	Top Flush Mount	20.36	13.53
32S/13E-30F03	Highway 1 Deep	Careaga	10/10/1980	9.75	Flush	Top Flush Mount	20.36	10.61
32S/13E-30F03	Highway 1 Deep	Careaga	5/9/1980	7.02	Flush	Top Flush Mount	20.36	13.34
32S/13E-30F03	Highway 1 Deep	Careaga	11/7/1979	7.88	Flush	Top Flush Mount	20.36	12.48
32S/13E-30F03	Highway 1 Deep	Careaga	4/17/1979	5.09	Flush	Top Flush Mount	20.36	15.27
32S/13E-30F03	Highway 1 Deep	Careaga	12/4/1978	6.02	Flush	Top Flush Mount	20.36	14.34
32S/13E-30F03	Highway 1 Deep	Careaga	4/24/1978	4.70	Flush	Top Flush Mount	20.36	15.66
32S/13E-30F03	Highway 1 Deep	Careaga	11/7/1977	10.75	Flush	Top Flush Mount	20.36	9.61
32S/13E-30F03	Highway 1 Deep	Careaga	5/17/1977	8.95	Flush	Top Flush Mount	20.36	11.41
32S/13E-30F03	Highway 1 Deep	Careaga	6/9/1976	14.24	Flush	Top Flush Mount	20.36	6.12
32S/13E-30F03	Highway 1 Deep	Careaga	1/14/1976	7.24	Flush	Top Flush Mount	20.36	13.12
32S/13E-30F03	Highway 1 Deep	Careaga	7/7/1975	8.42	Flush	Top Flush Mount	20.36	11.94
32S/13E-30F03	Highway 1 Deep	Careaga	4/1/1975	5.58	Flush	Top Flush Mount	20.36	14.78
32S/13E-30F03	Highway 1 Deep	Careaga	6/7/1974	5.54	Flush	Top Flush Mount	20.36	14.82
32S/13E-30F03	Highway 1 Deep	Careaga	9/20/1973	7.18	Flush	Top Flush Mount	20.36	13.18
32S/13E-30F03	Highway 1 Deep	Careaga	6/29/1972	9.62	Flush	Top Flush Mount	20.36	10.74
32S/13E-30F03	Highway 1 Deep	Careaga	2/23/1972	5.65	Flush	Top Flush Mount	20.36	14.71
32S/13E-30F03	Highway 1 Deep	Careaga	11/29/1971	6.78	Flush	Top Flush Mount	20.36	13.58
32S/13E-30F03	Highway 1 Deep	Careaga	8/26/1971	8.20	Flush	Top Flush Mount	20.36	12.16
32S/13E-30F03	Highway 1 Deep	Careaga	6/2/1971	7.34	Flush	Top Flush Mount	20.36	13.02
32S/13E-30F03	Highway 1 Deep	Careaga	3/2/1971	5.76	Flush	Top Flush Mount	20.36	14.60
32S/13E-30F03	Highway 1 Deep	Careaga	12/15/1970	5.79	Flush	Top Flush Mount	20.36	14.57
32S/13E-30F03	Highway 1 Deep	Careaga	8/4/1970	10.11	Flush	Top Flush Mount	20.36	10.25
32S/13E-30F03	Highway 1 Deep	Careaga	6/3/1970	9.88	Flush	Top Flush Mount	20.36	10.48
32S/13E-30F03	Highway 1 Deep	Careaga	3/27/1970	6.83	Flush	Top Flush Mount	20.36	13.53
32S/13E-30F03	Highway 1 Deep	Careaga	1/29/1970	6.35	Flush	Top Flush Mount	20.36	14.01
32S/13E-30F03	Highway 1 Deep	Careaga	10/3/1969	9.44	Flush	Top Flush Mount	20.36	10.92
32S/13E-30F03	Highway 1 Deep	Careaga	7/23/1969	10.05	Flush	Top Flush Mount	20.36	10.31
32S/13E-30F03	Highway 1 Deep	Careaga	6/24/1969	9.04	Flush	Top Flush Mount	20.36	11.32

## Appendix A: NCMA Sentry Wells Water Level Data



Well	Common Name	Aquifer	Date	Depth to Water (feet)	Surface Completion	RP Description	RP Elev, feet NAVD88	Groundwater Elevation (feet VD88)
32S/13E-30F03	Highway 1 Deep	Careaga	5/22/1969	7.91	Flush	Top Flush Mount	20.36	12.45
32S/13E-30F03	Highway 1 Deep	Careaga	4/18/1969	6.53	Flush	Top Flush Mount	20.36	13.83
32S/13E-30F03	Highway 1 Deep	Careaga	3/20/1969	6.57	Flush	Top Flush Mount	20.36	13.79
32S/13E-30F03	Highway 1 Deep	Careaga	2/21/1969	7.18	Flush	Top Flush Mount	20.36	13.18
32S/13E-30F03	Highway 1 Deep	Careaga	1/15/1969	9.37	Flush	Top Flush Mount	20.36	10.99
32S/13E-30F03	Highway 1 Deep	Careaga	12/12/1968	10.33	Flush	Top Flush Mount	20.36	10.03
32S/13E-30F03	Highway 1 Deep	Careaga	11/14/1968	11.75	Flush	Top Flush Mount	20.36	8.61
32S/13E-30F03	Highway 1 Deep	Careaga	10/17/1968	13.55	Flush	Top Flush Mount	20.36	6.81
32S/13E-30F03	Highway 1 Deep	Careaga	9/14/1968	14.20	Flush	Top Flush Mount	20.36	6.16
32S/13E-30F03	Highway 1 Deep	Careaga	8/13/1968	13.65	Flush	Top Flush Mount	20.36	6.71
32S/13E-30F03	Highway 1 Deep	Careaga	6/24/1968	12.92	Flush	Top Flush Mount	20.36	7.44
32S/13E-30F03	Highway 1 Deep	Careaga	5/30/1968	11.91	Flush	Top Flush Mount	20.36	8.45
32S/13E-30F03	Highway 1 Deep	Careaga	4/20/1968	9.35	Flush	Top Flush Mount	20.36	11.01
32S/13E-30F03	Highway 1 Deep	Careaga	3/21/1968	8.25	Flush	Top Flush Mount	20.36	12.11
32S/13E-30F03	Highway 1 Deep	Careaga	2/22/1968	7.67	Flush	Top Flush Mount	20.36	12.69
32S/13E-30F03	Highway 1 Deep	Careaga	1/17/1968	7.61	Flush	Top Flush Mount	20.36	12.75
32S/13E-30F03	Highway 1 Deep	Careaga	12/8/1967	8.57	Flush	Top Flush Mount	20.36	11.79
32S/13E-30F03	Highway 1 Deep	Careaga	11/13/1967	9.93	Flush	Top Flush Mount	20.36	10.43
32S/13E-30F03	Highway 1 Deep	Careaga	10/9/1967	10.12	Flush	Top Flush Mount	20.36	10.24
32S/13E-30F03	Highway 1 Deep	Careaga	9/5/1967	10.45	Flush	Top Flush Mount	20.36	9.91
32S/13E-30F03	Highway 1 Deep	Careaga	8/8/1967	10.16	Flush	Top Flush Mount	20.36	10.20
32S/13E-30F03	Highway 1 Deep	Careaga	7/12/1967	9.40	Flush	Top Flush Mount	20.36	10.96
32S/13E-30F03	Highway 1 Deep	Careaga	6/1/1967	8.30	Flush	Top Flush Mount	20.36	12.06
32S/13E-30F03	Highway 1 Deep	Careaga	5/2/1967	7.13	Flush	Top Flush Mount	20.36	13.23

Appendix A: NCMA Sentry Wells Water Level Data



Well	Common Name	Aquifer	Date	Depth to Water (feet)	Surface Completion	RP Description	RP Elev, feet NAVD88	Groundwater Elevation (feet VD88)
32S/13E-30N01	Pier Ave Shallow	Alluvium	10/5/2021	9.85	Stove Pipe	Top of Steel	16.13	6.285
32S/13E-30N01	Pier Ave Shallow	Alluvium	7/13/2021	9.46	Stove Pipe	Top of Steel	16.13	6.675
32S/13E-30N01	Pier Ave Shallow	Alluvium	4/6/2021	9.25	Stove Pipe	Top of Steel	16.13	6.88
32S/13E-30N01	Pier Ave Shallow	Alluvium	1/6/2021	8.90	Stove Pipe	Top of Steel	16.13	7.23
32S/13E-30N01	Pier Ave Shallow	Alluvium	10/7/2020	9.31	Stove Pipe	Top of Steel	16.13	6.83
32S/13E-30N01	Pier Ave Shallow	Alluvium	7/6/2020	9.17	Stove Pipe	Top of Steel	16.13	6.97
32S/13E-30N01	Pier Ave Shallow	Alluvium	4/7/2020	8.92	Stove Pipe	Top of Steel	16.13	7.22
32S/13E-30N01	Pier Ave Shallow	Alluvium	1/7/2020	8.95	Stove Pipe	Top of Steel	16.13	7.18
32S/13E-30N01	Pier Ave Shallow	Alluvium	10/9/2019	9.63	Stove Pipe	Top of Steel	16.13	6.50
32S/13E-30N01	Pier Ave Shallow	Alluvium	7/9/2019	9.25	Stove Pipe	Top of Steel	16.13	6.88
32S/13E-30N01	Pier Ave Shallow	Alluvium	4/9/2019	8.91	Stove Pipe	Top of Steel	16.13	7.22
32S/13E-30N01	Pier Ave Shallow	Alluvium	1/8/2019	8.60	Stove Pipe	Top of Steel	16.13	7.53
32S/13E-30N01	Pier Ave Shallow	Alluvium	10/9/2018	9.35	Stove Pipe	Top of Steel	16.13	6.78
32S/13E-30N01	Pier Ave Shallow	Alluvium	7/10/2018	9.46	Stove Pipe	Top of Steel	16.13	6.67
32S/13E-30N01	Pier Ave Shallow	Alluvium	4/10/2018	9.04	Stove Pipe	Top of Steel	16.13	7.09
32S/13E-30N01	Pier Ave Shallow	Alluvium	1/10/2018	8.97	Stove Pipe	Top of Steel	16.13	7.16
32S/13E-30N01	Pier Ave Shallow	Alluvium	10/10/2017	9.35	Stove Pipe	Top of Steel	16.13	6.78
32S/13E-30N01	Pier Ave Shallow	Alluvium	7/11/2017	9.00	Stove Pipe	Top of Steel	16.13	7.13
32S/13E-30N01	Pier Ave Shallow	Alluvium	4/11/2017	8.70	Stove Pipe	Top of Steel	16.13	7.43
32S/13E-30N01	Pier Ave Shallow	Alluvium	1/10/2017	7.89	Stove Pipe	Top of Steel	16.13	8.24
32S/13E-30N01	Pier Ave Shallow	Alluvium	10/12/2016	10.21	Stove Pipe	Top of Steel	16.13	5.92
32S/13E-30N01	Pier Ave Shallow	Alluvium	7/19/2016	9.91	Stove Pipe	Top of Steel	16.13	6.22
32S/13E-30N01	Pier Ave Shallow	Alluvium	4/12/2016	8.93	Stove Pipe	Top of Steel	16.13	7.20
32S/13E-30N01	Pier Ave Shallow	Alluvium	1/12/2016	8.73	Stove Pipe	Top of Steel	16.13	7.40
32S/13E-30N01	Pier Ave Shallow	Alluvium	10/13/2015	10.11	Stove Pipe	Top of Steel	16.13	6.02
32S/13E-30N01	Pier Ave Shallow	Alluvium	7/14/2015	9.91	Stove Pipe	Top of Steel	16.13	6.22
32S/13E-30N01	Pier Ave Shallow	Alluvium	4/14/2015	9.51	Stove Pipe	Top of Steel	16.13	6.62
32S/13E-30N01	Pier Ave Shallow	Alluvium	1/13/2015	9.03	Stove Pipe	Top of Steel	16.13	7.10
32S/13E-30N01	Pier Ave Shallow	Alluvium	10/14/2014	9.95	Stove Pipe	Top of Steel	16.13	6.18
32S/13E-30N01	Pier Ave Shallow	Alluvium	7/29/2014	9.88	Stove Pipe	Top of Steel	16.13	6.25
32S/13E-30N01	Pier Ave Shallow	Alluvium	6/4/2014	9.54	Stove Pipe	Top of Steel	16.13	6.59
32S/13E-30N01	Pier Ave Shallow	Alluvium	4/15/2014	9.17	Stove Pipe	Top of Steel	16.13	6.96
32S/13E-30N01	Pier Ave Shallow	Alluvium	1/14/2014	9.61	Stove Pipe	Top of Steel	16.13	6.52

## Appendix A: NCMA Sentry Wells Water Level Data



Well	Common Name	Aquifer	Date	Depth to Water (feet)	Surface Completion	RP Description	RP Elev, feet NAVD88	Groundwater Elevation (feet VD88)
32S/13E-30N01	Pier Ave Shallow	Alluvium	10/14/2013	9.86	Stove Pipe	Top of Steel	16.13	6.27
32S/13E-30N01	Pier Ave Shallow	Alluvium	7/9/2013	9.40	Stove Pipe	Top of Steel	16.13	6.73
32S/13E-30N01	Pier Ave Shallow	Alluvium	4/10/2013	8.98	Stove Pipe	Top of Steel	16.13	7.15
32S/13E-30N01	Pier Ave Shallow	Alluvium	1/14/2013	8.60	Stove Pipe	Top of Steel	16.13	7.53
32S/13E-30N01	Pier Ave Shallow	Alluvium	10/29/2012	8.96	Stove Pipe	Top of Steel	16.13	7.17
32S/13E-30N01	Pier Ave Shallow	Alluvium	7/23/2012	8.54	Stove Pipe	Top of Steel	16.13	7.59
32S/13E-30N01	Pier Ave Shallow	Alluvium	4/18/2012	8.53	Stove Pipe	Top of Steel	16.13	7.60
32S/13E-30N01	Pier Ave Shallow	Alluvium	1/9/2012	8.74	Stove Pipe	Top of Steel	16.13	7.39
32S/13E-30N01	Pier Ave Shallow	Alluvium	11/21/2011	8.78	Stove Pipe	Top of Steel	16.13	7.35
32S/13E-30N01	Pier Ave Shallow	Alluvium	7/26/2011	9.01	Stove Pipe	Top of Steel	16.13	7.12
32S/13E-30N01	Pier Ave Shallow	Alluvium	4/20/2011	8.59	Stove Pipe	Top of Steel	16.13	7.54
32S/13E-30N01	Pier Ave Shallow	Alluvium	1/24/2011	8.18	Stove Pipe	Top of Steel	16.13	7.95
32S/13E-30N01	Pier Ave Shallow	Alluvium	10/21/2010	9.99	Stove Pipe	Top of Steel	16.13	6.14
32S/13E-30N01	Pier Ave Shallow	Alluvium	7/27/2010	8.97	Stove Pipe	Top of Steel	16.13	7.16
32S/13E-30N01	Pier Ave Shallow	Alluvium	4/27/2010	6.14	Flush	Top Flush Mount	13.53	7.39
32S/13E-30N01	Pier Ave Shallow	Alluvium	1/26/2010	4.90	Flush	Top Flush Mount	13.53	8.63
32S/13E-30N01	Pier Ave Shallow	Alluvium	10/20/2009	6.53	Flush	Top Flush Mount	13.53	7.00
32S/13E-30N01	Pier Ave Shallow	Alluvium	8/20/2009	6.71	Flush	Top Flush Mount	13.53	6.82
32S/13E-30N01	Pier Ave Shallow	Alluvium	5/11/2009	6.03	Flush	Top Flush Mount	13.53	7.50
32S/13E-30N01	Pier Ave Shallow	Alluvium	4/7/2009	5.83	Flush	Top Flush Mount	13.53	7.70
32S/13E-30N01	Pier Ave Shallow	Alluvium	10/15/2008	7.19	Flush	Top Flush Mount	13.53	6.34
32S/13E-30N01	Pier Ave Shallow	Alluvium	4/15/2008	6.20	Flush	Top Flush Mount	13.53	7.33
32S/13E-30N01	Pier Ave Shallow	Alluvium	10/18/2007	7.20	Flush	Top Flush Mount	13.53	6.33
32S/13E-30N01	Pier Ave Shallow	Alluvium	4/25/2006	5.55	Flush	Top Flush Mount	13.53	7.98
32S/13E-30N01	Pier Ave Shallow	Alluvium	10/7/2005	6.85	Flush	Top Flush Mount	13.53	6.68
32S/13E-30N01	Pier Ave Shallow	Alluvium	4/29/2005	5.35	Flush	Top Flush Mount	13.53	8.18
32S/13E-30N01	Pier Ave Shallow	Alluvium	10/27/2004	6.50	Flush	Top Flush Mount	13.53	7.03
32S/13E-30N01	Pier Ave Shallow	Alluvium	4/8/2004	5.80	Flush	Top Flush Mount	13.53	7.73
32S/13E-30N01	Pier Ave Shallow	Alluvium	10/14/2002	6.60	Flush	Top Flush Mount	13.53	6.93
32S/13E-30N01	Pier Ave Shallow	Alluvium	4/9/2002	5.70	Flush	Top Flush Mount	13.53	7.83
32S/13E-30N01	Pier Ave Shallow	Alluvium	10/5/2001	5.80	Flush	Top Flush Mount	13.53	7.73
32S/13E-30N01	Pier Ave Shallow	Alluvium	4/23/2001	5.00	Flush	Top Flush Mount	13.53	8.53
32S/13E-30N01	Pier Ave Shallow	Alluvium	10/16/2000	5.90	Flush	Top Flush Mount	13.53	7.63

## Appendix A: NCMA Sentry Wells Water Level Data



Well	Common Name	Aquifer	Date	Depth to Water (feet)	Surface Completion	RP Description	RP Elev, feet NAVD88	Groundwater Elevation (feet VD88)
32S/13E-30N01	Pier Ave Shallow	Alluvium	4/24/2000	5.20	Flush	Top Flush Mount	13.53	8.33
32S/13E-30N01	Pier Ave Shallow	Alluvium	10/29/1999	6.10	Flush	Top Flush Mount	13.53	7.43
32S/13E-30N01	Pier Ave Shallow	Alluvium	4/15/1999	5.50	Flush	Top Flush Mount	13.53	8.03
32S/13E-30N01	Pier Ave Shallow	Alluvium	10/20/1998	6.20	Flush	Top Flush Mount	13.53	7.33
32S/13E-30N01	Pier Ave Shallow	Alluvium	4/22/1998	4.90	Flush	Top Flush Mount	13.53	8.63
32S/13E-30N01	Pier Ave Shallow	Alluvium	10/22/1997	6.02	Flush	Top Flush Mount	13.53	7.51
32S/13E-30N01	Pier Ave Shallow	Alluvium	4/29/1997	6.10	Flush	Top Flush Mount	13.53	7.43
32S/13E-30N01	Pier Ave Shallow	Alluvium	10/23/1996	6.15	Flush	Top Flush Mount	13.53	7.38
32S/13E-30N01	Pier Ave Shallow	Alluvium	4/29/1996	5.80	Flush	Top Flush Mount	13.53	7.73
32S/13E-30N01	Pier Ave Shallow	Alluvium	10/10/1995	6.20	Flush	Top Flush Mount	13.53	7.33
32S/13E-30N01	Pier Ave Shallow	Alluvium	4/19/1995	5.20	Flush	Top Flush Mount	13.53	8.33
32S/13E-30N01	Pier Ave Shallow	Alluvium	11/1/1994	6.60	Flush	Top Flush Mount	13.53	6.93
32S/13E-30N01	Pier Ave Shallow	Alluvium	4/11/1994	5.80	Flush	Top Flush Mount	13.53	7.73
32S/13E-30N01	Pier Ave Shallow	Alluvium	10/13/1993	6.33	Flush	Top Flush Mount	13.53	7.20
32S/13E-30N01	Pier Ave Shallow	Alluvium	4/8/1993	5.40	Flush	Top Flush Mount	13.53	8.13
32S/13E-30N01	Pier Ave Shallow	Alluvium	11/4/1992	6.10	Flush	Top Flush Mount	13.53	7.43
32S/13E-30N01	Pier Ave Shallow	Alluvium	4/21/1992	5.17	Flush	Top Flush Mount	13.53	8.36
32S/13E-30N01	Pier Ave Shallow	Alluvium	4/11/1991	5.16	Flush	Top Flush Mount	13.53	8.37
32S/13E-30N01	Pier Ave Shallow	Alluvium	10/11/1990	6.93	Flush	Top Flush Mount	13.53	6.60
32S/13E-30N01	Pier Ave Shallow	Alluvium	4/24/1990	6.10	Flush	Top Flush Mount	13.53	7.43
32S/13E-30N01	Pier Ave Shallow	Alluvium	10/4/1989	6.65	Flush	Top Flush Mount	13.53	6.88
32S/13E-30N01	Pier Ave Shallow	Alluvium	4/17/1989	6.23	Flush	Top Flush Mount	13.53	7.30
32S/13E-30N01	Pier Ave Shallow	Alluvium	10/20/1988	6.77	Flush	Top Flush Mount	13.53	6.76
32S/13E-30N01	Pier Ave Shallow	Alluvium	4/28/1988	6.13	Flush	Top Flush Mount	13.53	7.40
32S/13E-30N01	Pier Ave Shallow	Alluvium	4/21/1988	5.77	Flush	Top Flush Mount	13.53	7.76
32S/13E-30N01	Pier Ave Shallow	Alluvium	10/19/1987	6.61	Flush	Top Flush Mount	13.53	6.92
32S/13E-30N01	Pier Ave Shallow	Alluvium	4/13/1987	5.99	Flush	Top Flush Mount	13.53	7.54
32S/13E-30N01	Pier Ave Shallow	Alluvium	11/5/1986	6.26	Flush	Top Flush Mount	13.53	7.27
32S/13E-30N01	Pier Ave Shallow	Alluvium	4/15/1986	4.89	Flush	Top Flush Mount	13.53	8.64
32S/13E-30N01	Pier Ave Shallow	Alluvium	4/22/1985	5.40	Flush	Top Flush Mount	13.53	8.13
32S/13E-30N01	Pier Ave Shallow	Alluvium	10/24/1984	6.00	Flush	Top Flush Mount	13.53	7.53
32S/13E-30N01	Pier Ave Shallow	Alluvium	10/28/1983	6.00	Flush	Top Flush Mount	13.53	7.53
32S/13E-30N01	Pier Ave Shallow	Alluvium	5/6/1982	4.03	Flush	Top Flush Mount	13.53	9.50



## Appendix A: NCMA Sentry Wells Water Level Data



Well	Common Name	Aquifer	Date	Depth to Water (feet)	Surface Completion	RP Description	RP Elev, feet NAVD88	Groundwater Elevation (feet VD88)
32S/13E-30N01	Pier Ave Shallow	Alluvium	10/20/1981	6.18	Flush	Top Flush Mount	13.53	7.35
32S/13E-30N01	Pier Ave Shallow	Alluvium	4/21/1981	5.35	Flush	Top Flush Mount	13.53	8.18
32S/13E-30N01	Pier Ave Shallow	Alluvium	10/10/1980	5.95	Flush	Top Flush Mount	13.53	7.58
32S/13E-30N01	Pier Ave Shallow	Alluvium	5/9/1980	4.97	Flush	Top Flush Mount	13.53	8.56
32S/13E-30N01	Pier Ave Shallow	Alluvium	11/7/1979	5.89	Flush	Top Flush Mount	13.53	7.64
32S/13E-30N01	Pier Ave Shallow	Alluvium	4/17/1979	5.63	Flush	Top Flush Mount	13.53	7.90
32S/13E-30N01	Pier Ave Shallow	Alluvium	12/4/1978	5.64	Flush	Top Flush Mount	13.53	7.89
32S/13E-30N01	Pier Ave Shallow	Alluvium	4/24/1978	5.25	Flush	Top Flush Mount	13.53	8.28
32S/13E-30N01	Pier Ave Shallow	Alluvium	11/7/1977	6.16	Flush	Top Flush Mount	13.53	7.37
32S/13E-30N01	Pier Ave Shallow	Alluvium	5/17/1977	6.41	Flush	Top Flush Mount	13.53	7.12
32S/13E-30N01	Pier Ave Shallow	Alluvium	6/7/1976	6.52	Flush	Top Flush Mount	13.53	7.01
32S/13E-30N01	Pier Ave Shallow	Alluvium	5/21/1976	6.50	Flush	Top Flush Mount	13.53	7.03
32S/13E-30N01	Pier Ave Shallow	Alluvium	1/14/1976	6.15	Flush	Top Flush Mount	13.53	7.38
32S/13E-30N01	Pier Ave Shallow	Alluvium	7/7/1975	6.33	Flush	Top Flush Mount	13.53	7.20
32S/13E-30N01	Pier Ave Shallow	Alluvium	4/1/1975	6.18	Flush	Top Flush Mount	13.53	7.35
32S/13E-30N01	Pier Ave Shallow	Alluvium	6/7/1974	6.12	Flush	Top Flush Mount	13.53	7.41
32S/13E-30N01	Pier Ave Shallow	Alluvium	9/20/1973	6.75	Flush	Top Flush Mount	13.53	6.78
32S/13E-30N01	Pier Ave Shallow	Alluvium	6/29/1972	6.48	Flush	Top Flush Mount	13.53	7.05
32S/13E-30N01	Pier Ave Shallow	Alluvium	2/29/1972	6.80	Flush	Top Flush Mount	13.53	6.73
32S/13E-30N01	Pier Ave Shallow	Alluvium	11/29/1971	6.31	Flush	Top Flush Mount	13.53	7.22
32S/13E-30N01	Pier Ave Shallow	Alluvium	8/26/1971	6.23	Flush	Top Flush Mount	13.53	7.30
32S/13E-30N01	Pier Ave Shallow	Alluvium	6/2/1971	6.12	Flush	Top Flush Mount	13.53	7.41
32S/13E-30N01	Pier Ave Shallow	Alluvium	3/2/1971	5.49	Flush	Top Flush Mount	13.53	8.04
32S/13E-30N01	Pier Ave Shallow	Alluvium	12/15/1970	5.73	Flush	Top Flush Mount	13.53	7.80
32S/13E-30N01	Pier Ave Shallow	Alluvium	5/22/1969	6.28	Flush	Top Flush Mount	13.53	7.25
32S/13E-30N01	Pier Ave Shallow	Alluvium	4/18/1969	5.94	Flush	Top Flush Mount	13.53	7.59
32S/13E-30N01	Pier Ave Shallow	Alluvium	3/20/1969	5.42	Flush	Top Flush Mount	13.53	8.11
32S/13E-30N01	Pier Ave Shallow	Alluvium	2/21/1969	4.96	Flush	Top Flush Mount	13.53	8.57
32S/13E-30N01	Pier Ave Shallow	Alluvium	1/5/1969	6.66	Flush	Top Flush Mount	13.53	6.87
32S/13E-30N01	Pier Ave Shallow	Alluvium	12/12/1968	7.24	Flush	Top Flush Mount	13.53	6.29
32S/13E-30N01	Pier Ave Shallow	Alluvium	11/14/1968	7.46	Flush	Top Flush Mount	13.53	6.07
32S/13E-30N01	Pier Ave Shallow	Alluvium	10/17/1968	7.81	Flush	Top Flush Mount	13.53	5.72
32S/13E-30N01	Pier Ave Shallow	Alluvium	9/14/1968	7.88	Flush	Top Flush Mount	13.53	5.65

## Appendix A: NCMA Sentry Wells Water Level Data



Well	Common Name	Aquifer	Date	Depth to Water (feet)	Surface Completion	RP Description	RP Elev, feet NAVD88	Groundwater Elevation (feet VD88)
32S/13E-30N01	Pier Ave Shallow	Alluvium	8/13/1968	7.50	Flush	Top Flush Mount	13.53	6.03
32S/13E-30N01	Pier Ave Shallow	Alluvium	3/21/1968	6.15	Flush	Top Flush Mount	13.53	7.38
32S/13E-30N01	Pier Ave Shallow	Alluvium	2/22/1968	6.23	Flush	Top Flush Mount	13.53	7.30
32S/13E-30N01	Pier Ave Shallow	Alluvium	1/17/1968	6.68	Flush	Top Flush Mount	13.53	6.85
32S/13E-30N01	Pier Ave Shallow	Alluvium	12/8/1967	6.45	Flush	Top Flush Mount	13.53	7.08
32S/13E-30N01	Pier Ave Shallow	Alluvium	11/13/1967	7.02	Flush	Top Flush Mount	13.53	6.51
32S/13E-30N01	Pier Ave Shallow	Alluvium	10/9/1967	7.30	Flush	Top Flush Mount	13.53	6.23
32S/13E-30N01	Pier Ave Shallow	Alluvium	9/5/1967	7.18	Flush	Top Flush Mount	13.53	6.35
32S/13E-30N01	Pier Ave Shallow	Alluvium	8/8/1967	7.04	Flush	Top Flush Mount	13.53	6.49
32S/13E-30N01	Pier Ave Shallow	Alluvium	7/12/1967	7.02	Flush	Top Flush Mount	13.53	6.51
32S/13E-30N01	Pier Ave Shallow	Alluvium	6/1/1967	6.75	Flush	Top Flush Mount	13.53	6.78
32S/13E-30N01	Pier Ave Shallow	Alluvium	5/2/1967	6.40	Flush	Top Flush Mount	13.53	7.13
32S/13E-30N01	Pier Ave Shallow	Alluvium	12/12/1950	72.44	Flush	Top Flush Mount	13.53	-58.91
32S/13E-30N01	Pier Ave Shallow	Alluvium	4/14/1950	68.38	Flush	Top Flush Mount	13.53	-54.85
32S/13E-30N01	Pier Ave Shallow	Alluvium	4/8/1942	43.63	Flush	Top Flush Mount	13.53	-30.10
32S/13E-30N01	Pier Ave Shallow	Alluvium	4/1/1942	44.00	Flush	Top Flush Mount	13.53	-30.47
32S/13E-30N01	Pier Ave Shallow	Alluvium	3/2/1937	63.41	Flush	Top Flush Mount	13.53	-49.88
32S/13E-30N01	Pier Ave Shallow	Alluvium	8/30/1933	59.66	Flush	Top Flush Mount	13.53	-46.13

## Appendix A: NCMA Sentry Wells Water Level Data



Well	Common Name	Aquifer	Date	Depth to Water (feet)	Surface Completion	RP Description	RP Elev, feet NAVD88	Groundwater Elevation (feet VD88)
32S/13E-30N03	Pier Ave Middle	Paso Robles	10/5/2021	9.35	Stove Pipe	Top of Steel	16.13	6.781666667
32S/13E-30N03	Pier Ave Middle	Paso Robles	7/13/2021	10.49	Stove Pipe	Top of Steel	16.13	5.641666667
32S/13E-30N03	Pier Ave Middle	Paso Robles	4/6/2021	7.77	Stove Pipe	Top of Steel	16.13	8.36
32S/13E-30N03	Pier Ave Middle	Paso Robles	1/6/2021	8.81	Stove Pipe	Top of Steel	16.13	7.32
32S/13E-30N03	Pier Ave Middle	Paso Robles	10/7/2020	9.00	Stove Pipe	Top of Steel	16.13	7.13
32S/13E-30N03	Pier Ave Middle	Paso Robles	7/6/2020	8.37	Stove Pipe	Top of Steel	16.13	7.76
32S/13E-30N03	Pier Ave Middle	Paso Robles	4/7/2020	7.42	Stove Pipe	Top of Steel	16.13	8.71
32S/13E-30N03	Pier Ave Middle	Paso Robles	1/7/2020	7.89	Stove Pipe	Top of Steel	16.13	8.24
32S/13E-30N03	Pier Ave Middle	Paso Robles	10/9/2019	8.29	Stove Pipe	Top of Steel	16.13	7.84
32S/13E-30N03	Pier Ave Middle	Paso Robles	7/9/2019	8.35	Stove Pipe	Top of Steel	16.13	7.78
32S/13E-30N03	Pier Ave Middle	Paso Robles	4/9/2019	8.25	Stove Pipe	Top of Steel	16.13	7.88
32S/13E-30N03	Pier Ave Middle	Paso Robles	1/8/2019	7.90	Stove Pipe	Top of Steel	16.13	8.23
32S/13E-30N03	Pier Ave Middle	Paso Robles	10/9/2018	8.37	Stove Pipe	Top of Steel	16.13	7.76
32S/13E-30N03	Pier Ave Middle	Paso Robles	7/10/2018	9.12	Stove Pipe	Top of Steel	16.13	7.01
32S/13E-30N03	Pier Ave Middle	Paso Robles	4/10/2018	7.50	Stove Pipe	Top of Steel	16.13	8.63
32S/13E-30N03	Pier Ave Middle	Paso Robles	1/10/2018	7.61	Stove Pipe	Top of Steel	16.13	8.52
32S/13E-30N03	Pier Ave Middle	Paso Robles	10/10/2017	8.61	Stove Pipe	Top of Steel	16.13	7.52
32S/13E-30N03	Pier Ave Middle	Paso Robles	7/11/2017	8.84	Stove Pipe	Top of Steel	16.13	7.29
32S/13E-30N03	Pier Ave Middle	Paso Robles	4/11/2017	7.55	Stove Pipe	Top of Steel	16.13	8.58
32S/13E-30N03	Pier Ave Middle	Paso Robles	1/10/2017	7.11	Stove Pipe	Top of Steel	16.13	9.02
32S/13E-30N03	Pier Ave Middle	Paso Robles	10/12/2016	10.13	Stove Pipe	Top of Steel	16.13	6.00
32S/13E-30N03	Pier Ave Middle	Paso Robles	7/19/2016	10.62	Stove Pipe	Top of Steel	16.13	5.51
32S/13E-30N03	Pier Ave Middle	Paso Robles	4/12/2016	9.21	Stove Pipe	Top of Steel	16.13	6.92
32S/13E-30N03	Pier Ave Middle	Paso Robles	1/12/2016	7.98	Stove Pipe	Top of Steel	16.13	8.15
32S/13E-30N03	Pier Ave Middle	Paso Robles	10/13/2015	10.48	Stove Pipe	Top of Steel	16.13	5.65
32S/13E-30N03	Pier Ave Middle	Paso Robles	7/14/2015	10.88	Stove Pipe	Top of Steel	16.13	5.25
32S/13E-30N03	Pier Ave Middle	Paso Robles	4/14/2015	11.88	Stove Pipe	Top of Steel	16.13	4.25
32S/13E-30N03	Pier Ave Middle	Paso Robles	1/13/2015	9.40	Stove Pipe	Top of Steel	16.13	6.73
32S/13E-30N03	Pier Ave Middle	Paso Robles	10/14/2014	10.52	Stove Pipe	Top of Steel	16.13	5.61
32S/13E-30N03	Pier Ave Middle	Paso Robles	7/29/2014	10.22	Stove Pipe	Top of Steel	16.13	5.91
32S/13E-30N03	Pier Ave Middle	Paso Robles	6/4/2014	11.33	Stove Pipe	Top of Steel	16.13	4.80
32S/13E-30N03	Pier Ave Middle	Paso Robles	4/15/2014	9.31	Stove Pipe	Top of Steel	16.13	6.82
32S/13E-30N03	Pier Ave Middle	Paso Robles	1/14/2014	10.26	Stove Pipe	Top of Steel	16.13	5.87

## Appendix A: NCMA Sentry Wells Water Level Data



Well	Common Name	Aquifer	Date	Depth to Water (feet)	Surface Completion	RP Description	RP Elev, feet NAVD88	Groundwater Elevation (feet VD88)
32S/13E-30N03	Pier Ave Middle	Paso Robles	10/14/2013	10.72	Stove Pipe	Top of Steel	16.13	5.41
32S/13E-30N03	Pier Ave Middle	Paso Robles	7/9/2013	10.36	Stove Pipe	Top of Steel	16.13	5.77
32S/13E-30N03	Pier Ave Middle	Paso Robles	4/10/2013	8.26	Stove Pipe	Top of Steel	16.13	7.87
32S/13E-30N03	Pier Ave Middle	Paso Robles	1/14/2013	7.71	Stove Pipe	Top of Steel	16.13	8.42
32S/13E-30N03	Pier Ave Middle	Paso Robles	10/29/2012	8.01	Stove Pipe	Top of Steel	16.13	8.12
32S/13E-30N03	Pier Ave Middle	Paso Robles	7/23/2012	9.15	Stove Pipe	Top of Steel	16.13	6.98
32S/13E-30N03	Pier Ave Middle	Paso Robles	4/18/2012	6.72	Stove Pipe	Top of Steel	16.13	9.41
32S/13E-30N03	Pier Ave Middle	Paso Robles	1/11/2012	7.17	Stove Pipe	Top of Steel	16.13	8.96
32S/13E-30N03	Pier Ave Middle	Paso Robles	11/21/2011	6.45	Stove Pipe	Top of Steel	16.13	9.68
32S/13E-30N03	Pier Ave Middle	Paso Robles	7/26/2011	7.59	Stove Pipe	Top of Steel	16.13	8.54
32S/13E-30N03	Pier Ave Middle	Paso Robles	4/20/2011	6.65	Stove Pipe	Top of Steel	16.13	9.48
32S/13E-30N03	Pier Ave Middle	Paso Robles	1/24/2011	6.68	Stove Pipe	Top of Steel	16.13	9.45
32S/13E-30N03	Pier Ave Middle	Paso Robles	10/21/2010	10.76	Stove Pipe	Top of Steel	16.13	5.37
32S/13E-30N03	Pier Ave Middle	Paso Robles	7/27/2010	9.53	Stove Pipe	Top of Steel	16.13	6.60
32S/13E-30N03	Pier Ave Middle	Paso Robles	4/27/2010	5.26	Flush	Top Flush Mount	13.53	8.27
32S/13E-30N03	Pier Ave Middle	Paso Robles	1/26/2010	5.88	Flush	Top Flush Mount	13.53	7.65
32S/13E-30N03	Pier Ave Middle	Paso Robles	10/20/2009	6.56	Flush	Top Flush Mount	13.53	6.97
32S/13E-30N03	Pier Ave Middle	Paso Robles	8/20/2009	7.50	Flush	Top Flush Mount	13.53	6.03
32S/13E-30N03	Pier Ave Middle	Paso Robles	5/12/2009	6.33	Flush	Top Flush Mount	13.53	7.20
32S/13E-30N03	Pier Ave Middle	Paso Robles	4/15/2008	5.50	Flush	Top Flush Mount	13.53	8.03
32S/13E-30N03	Pier Ave Middle	Paso Robles	10/18/2007	8.15	Flush	Top Flush Mount	13.53	5.38
32S/13E-30N03	Pier Ave Middle	Paso Robles	4/17/2007	5.50	Flush	Top Flush Mount	13.53	8.03
32S/13E-30N03	Pier Ave Middle	Paso Robles	10/19/2006	5.47	Flush	Top Flush Mount	13.53	8.06
32S/13E-30N03	Pier Ave Middle	Paso Robles	4/25/2006	3.25	Flush	Top Flush Mount	13.53	10.28
32S/13E-30N03	Pier Ave Middle	Paso Robles	10/7/2005	6.15	Flush	Top Flush Mount	13.53	7.38
32S/13E-30N03	Pier Ave Middle	Paso Robles	4/29/2005	5.42	Flush	Top Flush Mount	13.53	8.11
32S/13E-30N03	Pier Ave Middle	Paso Robles	10/27/2004	6.70	Flush	Top Flush Mount	13.53	6.83
32S/13E-30N03	Pier Ave Middle	Paso Robles	4/8/2004	4.90	Flush	Top Flush Mount	13.53	8.63
32S/13E-30N03	Pier Ave Middle	Paso Robles	10/8/2003	3.20	Flush	Top Flush Mount	13.53	10.33
32S/13E-30N03	Pier Ave Middle	Paso Robles	10/14/2002	7.10	Flush	Top Flush Mount	13.53	6.43
32S/13E-30N03	Pier Ave Middle	Paso Robles	4/9/2002	4.60	Flush	Top Flush Mount	13.53	8.93
32S/13E-30N03	Pier Ave Middle	Paso Robles	10/5/2001	5.00	Flush	Top Flush Mount	13.53	8.53
32S/13E-30N03	Pier Ave Middle	Paso Robles	4/23/2001	3.20	Flush	Top Flush Mount	13.53	10.33

## Appendix A: NCMA Sentry Wells Water Level Data



Well	Common Name	Aquifer	Date	Depth to Water (feet)	Surface Completion	RP Description	RP Elev, feet NAVD88	Groundwater Elevation (feet VD88)
32S/13E-30N03	Pier Ave Middle	Paso Robles	10/16/2000	4.80	Flush	Top Flush Mount	13.53	8.73
32S/13E-30N03	Pier Ave Middle	Paso Robles	4/24/2000	4.10	Flush	Top Flush Mount	13.53	9.43
32S/13E-30N03	Pier Ave Middle	Paso Robles	10/28/1999	5.80	Flush	Top Flush Mount	13.53	7.73
32S/13E-30N03	Pier Ave Middle	Paso Robles	4/15/1999	3.35	Flush	Top Flush Mount	13.53	10.18
32S/13E-30N03	Pier Ave Middle	Paso Robles	10/20/1998	3.50	Flush	Top Flush Mount	13.53	10.03
32S/13E-30N03	Pier Ave Middle	Paso Robles	4/22/1998	1.20	Flush	Top Flush Mount	13.53	12.33
32S/13E-30N03	Pier Ave Middle	Paso Robles	10/22/1997	4.93	Flush	Top Flush Mount	13.53	8.60
32S/13E-30N03	Pier Ave Middle	Paso Robles	4/29/1997	4.60	Flush	Top Flush Mount	13.53	8.93
32S/13E-30N03	Pier Ave Middle	Paso Robles	10/23/1996	5.05	Flush	Top Flush Mount	13.53	8.48
32S/13E-30N03	Pier Ave Middle	Paso Robles	4/29/1996	3.70	Flush	Top Flush Mount	13.53	9.83
32S/13E-30N03	Pier Ave Middle	Paso Robles	10/10/1995	4.70	Flush	Top Flush Mount	13.53	8.83
32S/13E-30N03	Pier Ave Middle	Paso Robles	4/19/1995	3.10	Flush	Top Flush Mount	13.53	10.43
32S/13E-30N03	Pier Ave Middle	Paso Robles	11/1/1994	7.20	Flush	Top Flush Mount	13.53	6.33
32S/13E-30N03	Pier Ave Middle	Paso Robles	4/11/1994	4.88	Flush	Top Flush Mount	13.53	8.65
32S/13E-30N03	Pier Ave Middle	Paso Robles	10/13/1993	5.98	Flush	Top Flush Mount	13.53	7.55
32S/13E-30N03	Pier Ave Middle	Paso Robles	4/8/1993	3.35	Flush	Top Flush Mount	13.53	10.18
32S/13E-30N03	Pier Ave Middle	Paso Robles	11/4/1992	6.40	Flush	Top Flush Mount	13.53	7.13
32S/13E-30N03	Pier Ave Middle	Paso Robles	4/21/1992	4.51	Flush	Top Flush Mount	13.53	9.02
32S/13E-30N03	Pier Ave Middle	Paso Robles	10/11/1991	6.59	Flush	Top Flush Mount	13.53	6.94
32S/13E-30N03	Pier Ave Middle	Paso Robles	4/11/1991	7.14	Flush	Top Flush Mount	13.53	6.39
32S/13E-30N03	Pier Ave Middle	Paso Robles	10/11/1990	7.61	Flush	Top Flush Mount	13.53	5.92
32S/13E-30N03	Pier Ave Middle	Paso Robles	4/24/1990	5.89	Flush	Top Flush Mount	13.53	7.64
32S/13E-30N03	Pier Ave Middle	Paso Robles	10/4/1989	6.54	Flush	Top Flush Mount	13.53	6.99
32S/13E-30N03	Pier Ave Middle	Paso Robles	4/17/1989	6.65	Flush	Top Flush Mount	13.53	6.88
32S/13E-30N03	Pier Ave Middle	Paso Robles	10/20/1988	7.29	Flush	Top Flush Mount	13.53	6.24
32S/13E-30N03	Pier Ave Middle	Paso Robles	4/28/1988	6.45	Flush	Top Flush Mount	13.53	7.08
32S/13E-30N03	Pier Ave Middle	Paso Robles	4/21/1988	6.45	Flush	Top Flush Mount	13.53	7.08
32S/13E-30N03	Pier Ave Middle	Paso Robles	10/19/1987	7.12	Flush	Top Flush Mount	13.53	6.41
32S/13E-30N03	Pier Ave Middle	Paso Robles	4/13/1987	5.09	Flush	Top Flush Mount	13.53	8.44
32S/13E-30N03	Pier Ave Middle	Paso Robles	11/5/1986	5.06	Flush	Top Flush Mount	13.53	8.47
32S/13E-30N03	Pier Ave Middle	Paso Robles	4/15/1986	5.61	Flush	Top Flush Mount	13.53	7.92
32S/13E-30N03	Pier Ave Middle	Paso Robles	4/22/1985	4.80	Flush	Top Flush Mount	13.53	8.73
32S/13E-30N03	Pier Ave Middle	Paso Robles	10/24/1984	5.70	Flush	Top Flush Mount	13.53	7.83

## Appendix A: NCMA Sentry Wells Water Level Data



Well	Common Name	Aquifer	Date	Depth to Water (feet)	Surface Completion	RP Description	RP Elev, feet NAVD88	Groundwater Elevation (feet VD88)
32S/13E-30N03	Pier Ave Middle	Paso Robles	10/28/1982	3.04	Flush	Top Flush Mount	13.53	10.49
32S/13E-30N03	Pier Ave Middle	Paso Robles	5/6/1982	5.53	Flush	Top Flush Mount	13.53	8.00
32S/13E-30N03	Pier Ave Middle	Paso Robles	10/20/1981	5.23	Flush	Top Flush Mount	13.53	8.30
32S/13E-30N03	Pier Ave Middle	Paso Robles	4/21/1981	3.09	Flush	Top Flush Mount	13.53	10.44
32S/13E-30N03	Pier Ave Middle	Paso Robles	10/10/1980	4.70	Flush	Top Flush Mount	13.53	8.83
32S/13E-30N03	Pier Ave Middle	Paso Robles	5/9/1980	5.30	Flush	Top Flush Mount	13.53	8.23
32S/13E-30N03	Pier Ave Middle	Paso Robles	11/7/1979	3.85	Flush	Top Flush Mount	13.53	9.68
32S/13E-30N03	Pier Ave Middle	Paso Robles	4/17/1979	4.48	Flush	Top Flush Mount	13.53	9.05
32S/13E-30N03	Pier Ave Middle	Paso Robles	12/4/1978	3.25	Flush	Top Flush Mount	13.53	10.28
32S/13E-30N03	Pier Ave Middle	Paso Robles	4/24/1978	3.32	Flush	Top Flush Mount	13.53	10.21
32S/13E-30N03	Pier Ave Middle	Paso Robles	11/7/1977	6.67	Flush	Top Flush Mount	13.53	6.86
32S/13E-30N03	Pier Ave Middle	Paso Robles	5/17/1977	6.67	Flush	Top Flush Mount	13.53	6.86
32S/13E-30N03	Pier Ave Middle	Paso Robles	6/7/1976	6.28	Flush	Top Flush Mount	13.53	7.25
32S/13E-30N03	Pier Ave Middle	Paso Robles	5/21/1976	6.07	Flush	Top Flush Mount	13.53	7.46
32S/13E-30N03	Pier Ave Middle	Paso Robles	1/14/1976	5.00	Flush	Top Flush Mount	13.53	8.53
32S/13E-30N03	Pier Ave Middle	Paso Robles	7/7/1975	5.00	Flush	Top Flush Mount	13.53	8.53
32S/13E-30N03	Pier Ave Middle	Paso Robles	4/1/1975	4.00	Flush	Top Flush Mount	13.53	9.53
32S/13E-30N03	Pier Ave Middle	Paso Robles	6/7/1974	4.00	Flush	Top Flush Mount	13.53	9.53
32S/13E-30N03	Pier Ave Middle	Paso Robles	9/20/1973	5.00	Flush	Top Flush Mount	13.53	8.53
32S/13E-30N03	Pier Ave Middle	Paso Robles	6/29/1972	11.00	Flush	Top Flush Mount	13.53	2.53
32S/13E-30N03	Pier Ave Middle	Paso Robles	2/29/1972	3.00	Flush	Top Flush Mount	13.53	10.53
32S/13E-30N03	Pier Ave Middle	Paso Robles	11/29/1971	5.81	Flush	Top Flush Mount	13.53	7.72
32S/13E-30N03	Pier Ave Middle	Paso Robles	8/26/1971	6.00	Flush	Top Flush Mount	13.53	7.53
32S/13E-30N03	Pier Ave Middle	Paso Robles	6/2/1971	6.00	Flush	Top Flush Mount	13.53	7.53
32S/13E-30N03	Pier Ave Middle	Paso Robles	3/2/1971	4.62	Flush	Top Flush Mount	13.53	8.91
32S/13E-30N03	Pier Ave Middle	Paso Robles	12/15/1970	6.03	Flush	Top Flush Mount	13.53	7.50
32S/13E-30N03	Pier Ave Middle	Paso Robles	6/24/1969	0.00	Flush	Top Flush Mount	13.53	13.53
32S/13E-30N03	Pier Ave Middle	Paso Robles	5/22/1969	7.00	Flush	Top Flush Mount	13.53	6.53
32S/13E-30N03	Pier Ave Middle	Paso Robles	4/18/1969	6.23	Flush	Top Flush Mount	13.53	7.30
32S/13E-30N03	Pier Ave Middle	Paso Robles	3/20/1969	5.24	Flush	Top Flush Mount	13.53	8.29
32S/13E-30N03	Pier Ave Middle	Paso Robles	2/21/1969	0.00	Flush	Top Flush Mount	13.53	13.53
32S/13E-30N03	Pier Ave Middle	Paso Robles	1/15/1969	8.24	Flush	Top Flush Mount	13.53	5.29
32S/13E-30N03	Pier Ave Middle	Paso Robles	12/12/1968	7.82	Flush	Top Flush Mount	13.53	5.71



## Appendix A: NCMA Sentry Wells Water Level Data



Well	Common Name	Aquifer	Date	Depth to Water (feet)	Surface Completion	RP Description	RP Elev, feet NAVD88	Groundwater Elevation (feet VD88)
32S/13E-30N03	Pier Ave Middle	Paso Robles	11/14/1968	9.05	Flush	Top Flush Mount	13.53	4.48
32S/13E-30N03	Pier Ave Middle	Paso Robles	10/17/1968	10.07	Flush	Top Flush Mount	13.53	3.46
32S/13E-30N03	Pier Ave Middle	Paso Robles	9/14/1968	10.77	Flush	Top Flush Mount	13.53	2.76
32S/13E-30N03	Pier Ave Middle	Paso Robles	8/23/1968	11.59	Flush	Top Flush Mount	13.53	1.94
32S/13E-30N03	Pier Ave Middle	Paso Robles	4/20/1968	0.00	Flush	Top Flush Mount	13.53	13.53
32S/13E-30N03	Pier Ave Middle	Paso Robles	3/21/1968	8.64	Flush	Top Flush Mount	13.53	4.89
32S/13E-30N03	Pier Ave Middle	Paso Robles	2/22/1968	7.20	Flush	Top Flush Mount	13.53	6.33
32S/13E-30N03	Pier Ave Middle	Paso Robles	1/17/1968	7.67	Flush	Top Flush Mount	13.53	5.86
32S/13E-30N03	Pier Ave Middle	Paso Robles	12/8/1967	6.95	Flush	Top Flush Mount	13.53	6.58
32S/13E-30N03	Pier Ave Middle	Paso Robles	11/13/1967	9.03	Flush	Top Flush Mount	13.53	4.50
32S/13E-30N03	Pier Ave Middle	Paso Robles	10/9/1967	8.05	Flush	Top Flush Mount	13.53	5.48
32S/13E-30N03	Pier Ave Middle	Paso Robles	9/5/1967	8.07	Flush	Top Flush Mount	13.53	5.46
32S/13E-30N03	Pier Ave Middle	Paso Robles	8/8/1967	9.14	Flush	Top Flush Mount	13.53	4.39
32S/13E-30N03	Pier Ave Middle	Paso Robles	7/12/1967	8.92	Flush	Top Flush Mount	13.53	4.61
32S/13E-30N03	Pier Ave Middle	Paso Robles	6/1/1967	6.70	Flush	Top Flush Mount	13.53	6.83
32S/13E-30N03	Pier Ave Middle	Paso Robles	5/2/1967	6.15	Flush	Top Flush Mount	13.53	7.38

## Appendix A: NCMA Sentry Wells Water Level Data



Well	Common Name	Aquifer	Date	Depth to Water (feet)	Surface Completion	RP Description	RP Elev, feet NAVD88	Groundwater Elevation (feet VD88)
32S/13E-30N02	Pier Ave Deep	Paso Robles	10/5/2021	12.28	Stove Pipe	Top of Steel	16.13	3.851666667
32S/13E-30N02	Pier Ave Deep	Paso Robles	7/13/2021	11.67	Stove Pipe	Top of Steel	16.13	4.461666667
32S/13E-30N02	Pier Ave Deep	Paso Robles	4/6/2021	8.28	Stove Pipe	Top of Steel	16.13	7.85
32S/13E-30N02	Pier Ave Deep	Paso Robles	1/6/2021	8.54	Stove Pipe	Top of Steel	16.13	7.59
32S/13E-30N02	Pier Ave Deep	Paso Robles	10/7/2020	11.33	Stove Pipe	Top of Steel	16.13	4.80
32S/13E-30N02	Pier Ave Deep	Paso Robles	7/6/2020	9.18	Stove Pipe	Top of Steel	16.13	6.95
32S/13E-30N02	Pier Ave Deep	Paso Robles	4/7/2020	5.01	Stove Pipe	Top of Steel	16.13	11.12
32S/13E-30N02	Pier Ave Deep	Paso Robles	1/7/2020	5.92	Stove Pipe	Top of Steel	16.13	10.21
32S/13E-30N02	Pier Ave Deep	Paso Robles	10/9/2019	10.00	Stove Pipe	Top of Steel	16.13	6.13
32S/13E-30N02	Pier Ave Deep	Paso Robles	7/9/2019	8.05	Stove Pipe	Top of Steel	16.13	8.08
32S/13E-30N02	Pier Ave Deep	Paso Robles	4/9/2019	5.23	Stove Pipe	Top of Steel	16.13	10.90
32S/13E-30N02	Pier Ave Deep	Paso Robles	1/8/2019	7.60	Stove Pipe	Top of Steel	16.13	8.53
32S/13E-30N02	Pier Ave Deep	Paso Robles	10/9/2018	10.77	Stove Pipe	Top of Steel	16.13	5.36
32S/13E-30N02	Pier Ave Deep	Paso Robles	7/10/2018	10.23	Stove Pipe	Top of Steel	16.13	5.90
32S/13E-30N02	Pier Ave Deep	Paso Robles	4/10/2018	5.96	Stove Pipe	Top of Steel	16.13	10.17
32S/13E-30N02	Pier Ave Deep	Paso Robles	1/10/2018	7.43	Stove Pipe	Top of Steel	16.13	8.70
32S/13E-30N02	Pier Ave Deep	Paso Robles	10/10/2017	10.40	Stove Pipe	Top of Steel	16.13	5.73
32S/13E-30N02	Pier Ave Deep	Paso Robles	7/11/2017	8.38	Stove Pipe	Top of Steel	16.13	7.75
32S/13E-30N02	Pier Ave Deep	Paso Robles	4/11/2017	5.35	Stove Pipe	Top of Steel	16.13	10.78
32S/13E-30N02	Pier Ave Deep	Paso Robles	1/10/2017	7.34	Stove Pipe	Top of Steel	16.13	8.79
32S/13E-30N02	Pier Ave Deep	Paso Robles	10/12/2016	13.44	Stove Pipe	Top of Steel	16.13	2.69
32S/13E-30N02	Pier Ave Deep	Paso Robles	7/19/2016	12.40	Stove Pipe	Top of Steel	16.13	3.73
32S/13E-30N02	Pier Ave Deep	Paso Robles	4/12/2016	8.57	Stove Pipe	Top of Steel	16.13	7.56
32S/13E-30N02	Pier Ave Deep	Paso Robles	1/12/2016	7.48	Stove Pipe	Top of Steel	16.13	8.65
32S/13E-30N02	Pier Ave Deep	Paso Robles	10/13/2015	14.14	Stove Pipe	Top of Steel	16.13	1.99
32S/13E-30N02	Pier Ave Deep	Paso Robles	7/14/2015	13.55	Stove Pipe	Top of Steel	16.13	2.58
32S/13E-30N02	Pier Ave Deep	Paso Robles	4/14/2015	10.02	Stove Pipe	Top of Steel	16.13	6.11
32S/13E-30N02	Pier Ave Deep	Paso Robles	1/13/2015	7.85	Stove Pipe	Top of Steel	16.13	8.28
32S/13E-30N02	Pier Ave Deep	Paso Robles	10/14/2014	13.69	Stove Pipe	Top of Steel	16.13	2.44
32S/13E-30N02	Pier Ave Deep	Paso Robles	7/29/2014	13.27	Stove Pipe	Top of Steel	16.13	2.86
32S/13E-30N02	Pier Ave Deep	Paso Robles	6/4/2014	15.20	Stove Pipe	Top of Steel	16.13	0.93
32S/13E-30N02	Pier Ave Deep	Paso Robles	5/5/2014	13.19	Stove Pipe	Top of Steel	16.13	2.94
32S/13E-30N02	Pier Ave Deep	Paso Robles	4/15/2014	8.57	Stove Pipe	Top of Steel	16.13	7.56

Appendix A: NCMA Sentry Wells Water Level Data



Well	Common Name	Aquifer	Date	Depth to Water (feet)	Surface Completion	RP Description	RP Elev, feet NAVD88	Groundwater Elevation (feet VD88)
32S/13E-30N02	Pier Ave Deep	Paso Robles	1/14/2014	9.30	Stove Pipe	Top of Steel	16.13	6.83
32S/13E-30N02	Pier Ave Deep	Paso Robles	10/14/2013	12.13	Stove Pipe	Top of Steel	16.13	4.00
32S/13E-30N02	Pier Ave Deep	Paso Robles	7/9/2013	11.05	Stove Pipe	Top of Steel	16.13	5.08
32S/13E-30N02	Pier Ave Deep	Paso Robles	4/10/2013	7.06	Stove Pipe	Top of Steel	16.13	9.07
32S/13E-30N02	Pier Ave Deep	Paso Robles	1/14/2013	4.98	Stove Pipe	Top of Steel	16.13	11.15
32S/13E-30N02	Pier Ave Deep	Paso Robles	10/29/2012	8.52	Stove Pipe	Top of Steel	16.13	7.61
32S/13E-30N02	Pier Ave Deep	Paso Robles	7/23/2012	8.31	Stove Pipe	Top of Steel	16.13	7.82
32S/13E-30N02	Pier Ave Deep	Paso Robles	4/18/2012	3.45	Stove Pipe	Top of Steel	16.13	12.68
32S/13E-30N02	Pier Ave Deep	Paso Robles	1/11/2012	4.88	Stove Pipe	Top of Steel	16.13	11.25
32S/13E-30N02	Pier Ave Deep	Paso Robles	11/21/2011	5.35	Stove Pipe	Top of Steel	16.13	10.78
32S/13E-30N02	Pier Ave Deep	Paso Robles	7/26/2011	7.25	Stove Pipe	Top of Steel	16.13	8.88
32S/13E-30N02	Pier Ave Deep	Paso Robles	4/20/2011	3.53	Flush	Top Flush Mount	13.53	10.00
32S/13E-30N02	Pier Ave Deep	Paso Robles	1/24/2011	3.67	Flush	Top Flush Mount	13.53	9.86
32S/13E-30N02	Pier Ave Deep	Paso Robles	10/21/2010	10.42	Flush	Top Flush Mount	13.53	3.11
32S/13E-30N02	Pier Ave Deep	Paso Robles	7/27/2010	10.02	Flush	Top Flush Mount	13.53	3.51
32S/13E-30N02	Pier Ave Deep	Paso Robles	4/27/2010	6.14	Flush	Top Flush Mount	13.53	7.39
32S/13E-30N02	Pier Ave Deep	Paso Robles	2/25/2010	1.72	Flush	Top Flush Mount	13.53	11.81
32S/13E-30N02	Pier Ave Deep	Paso Robles	2/25/2010	1.72	Flush	Top Flush Mount	13.53	11.81
32S/13E-30N02	Pier Ave Deep	Paso Robles	1/26/2010	3.72	Flush	Top Flush Mount	13.53	9.81
32S/13E-30N02	Pier Ave Deep	Paso Robles	10/20/2009	7.38	Flush	Top Flush Mount	13.53	6.15
32S/13E-30N02	Pier Ave Deep	Paso Robles	8/20/2009	11.94	Flush	Top Flush Mount	13.53	1.59
32S/13E-30N02	Pier Ave Deep	Paso Robles	5/11/2009	6.98	Flush	Top Flush Mount	13.53	6.55
32S/13E-30N02	Pier Ave Deep	Paso Robles	10/15/2008	12.23	Flush	Top Flush Mount	13.53	1.30
32S/13E-30N02	Pier Ave Deep	Paso Robles	4/15/2008	5.60	Flush	Top Flush Mount	13.53	7.93
32S/13E-30N02	Pier Ave Deep	Paso Robles	10/18/2007	10.35	Flush	Top Flush Mount	13.53	3.18
32S/13E-30N02	Pier Ave Deep	Paso Robles	4/17/2007	6.80	Flush	Top Flush Mount	13.53	6.73
32S/13E-30N02	Pier Ave Deep	Paso Robles	10/19/2006	5.07	Flush	Top Flush Mount	13.53	8.46
32S/13E-30N02	Pier Ave Deep	Paso Robles	4/25/2006	0.35	Flush	Top Flush Mount	13.53	13.18
32S/13E-30N02	Pier Ave Deep	Paso Robles	10/7/2005	2.50	Flush	Top Flush Mount	13.53	11.03
32S/13E-30N02	Pier Ave Deep	Paso Robles	4/29/2005	1.80	Flush	Top Flush Mount	13.53	11.73
32S/13E-30N02	Pier Ave Deep	Paso Robles	10/27/2004	8.40	Flush	Top Flush Mount	13.53	5.13
32S/13E-30N02	Pier Ave Deep	Paso Robles	4/8/2004	3.90	Flush	Top Flush Mount	13.53	9.63
32S/13E-30N02	Pier Ave Deep	Paso Robles	10/17/2002	6.20	Flush	Top Flush Mount	13.53	7.33

## Appendix A: NCMA Sentry Wells Water Level Data



Well	Common Name	Aquifer	Date	Depth to Water (feet)	Surface Completion	RP Description	RP Elev, feet NAVD88	Groundwater Elevation (feet VD88)
32S/13E-30N02	Pier Ave Deep	Paso Robles	4/9/2002	0.00	Flush	Top Flush Mount	13.53	13.53
32S/13E-30N02	Pier Ave Deep	Paso Robles	10/5/2001	3.70	Flush	Top Flush Mount	13.53	9.83
32S/13E-30N02	Pier Ave Deep	Paso Robles	4/23/2001	0.00	Flush	Top Flush Mount	13.53	13.53
32S/13E-30N02	Pier Ave Deep	Paso Robles	10/16/2000	2.90	Flush	Top Flush Mount	13.53	10.63
32S/13E-30N02	Pier Ave Deep	Paso Robles	4/24/2000	1.90	Flush	Top Flush Mount	13.53	11.63
32S/13E-30N02	Pier Ave Deep	Paso Robles	10/28/1999	2.98	Flush	Top Flush Mount	13.53	10.55
32S/13E-30N02	Pier Ave Deep	Paso Robles	4/15/1999	0.00	Flush	Top Flush Mount	13.53	13.53
32S/13E-30N02	Pier Ave Deep	Paso Robles	10/20/1998	3.30	Flush	Top Flush Mount	13.53	10.23
32S/13E-30N02	Pier Ave Deep	Paso Robles	4/22/1998	0.00	Flush	Top Flush Mount	13.53	13.53
32S/13E-30N02	Pier Ave Deep	Paso Robles	10/22/1997	5.45	Flush	Top Flush Mount	13.53	8.08
32S/13E-30N02	Pier Ave Deep	Paso Robles	4/29/1997	5.19	Flush	Top Flush Mount	13.53	8.34
32S/13E-30N02	Pier Ave Deep	Paso Robles	10/23/1996	5.91	Flush	Top Flush Mount	13.53	7.62
32S/13E-30N02	Pier Ave Deep	Paso Robles	4/29/1996	3.10	Flush	Top Flush Mount	13.53	10.43
32S/13E-30N02	Pier Ave Deep	Paso Robles	10/10/1995	9.15	Flush	Top Flush Mount	13.53	4.38
32S/13E-30N02	Pier Ave Deep	Paso Robles	4/19/1995	1.60	Flush	Top Flush Mount	13.53	11.93
32S/13E-30N02	Pier Ave Deep	Paso Robles	11/11/1994	7.10	Flush	Top Flush Mount	13.53	6.43
32S/13E-30N02	Pier Ave Deep	Paso Robles	4/11/1994	3.61	Flush	Top Flush Mount	13.53	9.92
32S/13E-30N02	Pier Ave Deep	Paso Robles	10/13/1993	8.45	Flush	Top Flush Mount	13.53	5.08
32S/13E-30N02	Pier Ave Deep	Paso Robles	4/8/1993	1.31	Flush	Top Flush Mount	13.53	12.22
32S/13E-30N02	Pier Ave Deep	Paso Robles	11/4/1992	7.10	Flush	Top Flush Mount	13.53	6.43
32S/13E-30N02	Pier Ave Deep	Paso Robles	4/21/1992	3.27	Flush	Top Flush Mount	13.53	10.26
32S/13E-30N02	Pier Ave Deep	Paso Robles	10/11/1991	8.79	Flush	Top Flush Mount	13.53	4.74
32S/13E-30N02	Pier Ave Deep	Paso Robles	4/11/1991	7.14	Flush	Top Flush Mount	13.53	6.39
32S/13E-30N02	Pier Ave Deep	Paso Robles	10/11/1990	8.70	Flush	Top Flush Mount	13.53	4.83
32S/13E-30N02	Pier Ave Deep	Paso Robles	4/24/1990	5.40	Flush	Top Flush Mount	13.53	8.13
32S/13E-30N02	Pier Ave Deep	Paso Robles	10/4/1989	6.34	Flush	Top Flush Mount	13.53	7.19
32S/13E-30N02	Pier Ave Deep	Paso Robles	4/17/1989	4.48	Flush	Top Flush Mount	13.53	9.05
32S/13E-30N02	Pier Ave Deep	Paso Robles	10/20/1988	7.28	Flush	Top Flush Mount	13.53	6.25
32S/13E-30N02	Pier Ave Deep	Paso Robles	4/29/1988	2.72	Flush	Top Flush Mount	13.53	10.81
32S/13E-30N02	Pier Ave Deep	Paso Robles	4/21/1988	3.78	Flush	Top Flush Mount	13.53	9.75
32S/13E-30N02	Pier Ave Deep	Paso Robles	10/19/1987	6.10	Flush	Top Flush Mount	13.53	7.43
32S/13E-30N02	Pier Ave Deep	Paso Robles	4/13/1987	1.22	Flush	Top Flush Mount	13.53	12.31
32S/13E-30N02	Pier Ave Deep	Paso Robles	11/5/1986	4.85	Flush	Top Flush Mount	13.53	8.68

## Appendix A: NCMA Sentry Wells Water Level Data



Well	Common Name	Aquifer	Date	Depth to Water (feet)	Surface Completion	RP Description	RP Elev, feet NAVD88	Groundwater Elevation (feet VD88)
32S/13E-30N02	Pier Ave Deep	Paso Robles	4/15/1986	0.88	Flush	Top Flush Mount	13.53	12.65
32S/13E-30N02	Pier Ave Deep	Paso Robles	4/22/1985	0.07	Flush	Top Flush Mount	13.53	13.46
32S/13E-30N02	Pier Ave Deep	Paso Robles	10/24/1984	3.38	Flush	Top Flush Mount	13.53	10.15
32S/13E-30N02	Pier Ave Deep	Paso Robles	10/28/1983	0.00	Flush	Top Flush Mount	13.53	13.53
32S/13E-30N02	Pier Ave Deep	Paso Robles	5/6/1982	0.00	Flush	Top Flush Mount	13.53	13.53
32S/13E-30N02	Pier Ave Deep	Paso Robles	10/20/1981	3.54	Flush	Top Flush Mount	13.53	9.99
32S/13E-30N02	Pier Ave Deep	Paso Robles	4/21/1981	0.00	Flush	Top Flush Mount	13.53	13.53
32S/13E-30N02	Pier Ave Deep	Paso Robles	10/10/1980	2.48	Flush	Top Flush Mount	13.53	11.05
32S/13E-30N02	Pier Ave Deep	Paso Robles	5/9/1980	0.00	Flush	Top Flush Mount	13.53	13.53
32S/13E-30N02	Pier Ave Deep	Paso Robles	11/7/1979	1.73	Flush	Top Flush Mount	13.53	11.80
32S/13E-30N02	Pier Ave Deep	Paso Robles	4/17/1979	0.00	Flush	Top Flush Mount	13.53	13.53
32S/13E-30N02	Pier Ave Deep	Paso Robles	12/4/1978	0.00	Flush	Top Flush Mount	13.53	13.53
32S/13E-30N02	Pier Ave Deep	Paso Robles	4/24/1978	0.00	Flush	Top Flush Mount	13.53	13.53
32S/13E-30N02	Pier Ave Deep	Paso Robles	11/7/1977	4.89	Flush	Top Flush Mount	13.53	8.64
32S/13E-30N02	Pier Ave Deep	Paso Robles	5/17/1977	2.80	Flush	Top Flush Mount	13.53	10.73
32S/13E-30N02	Pier Ave Deep	Paso Robles	6/7/1976	4.70	Flush	Top Flush Mount	13.53	8.83
32S/13E-30N02	Pier Ave Deep	Paso Robles	5/21/1976	3.79	Flush	Top Flush Mount	13.53	9.74
32S/13E-30N02	Pier Ave Deep	Paso Robles	11/14/1975	0.00	Flush	Top Flush Mount	13.53	13.53
32S/13E-30N02	Pier Ave Deep	Paso Robles	7/7/1975	2.53	Flush	Top Flush Mount	13.53	11.00
32S/13E-30N02	Pier Ave Deep	Paso Robles	4/1/1975	0.00	Flush	Top Flush Mount	13.53	13.53
32S/13E-30N02	Pier Ave Deep	Paso Robles	6/7/1974	0.00	Flush	Top Flush Mount	13.53	13.53
32S/13E-30N02	Pier Ave Deep	Paso Robles	9/20/1973	1.03	Flush	Top Flush Mount	13.53	12.50
32S/13E-30N02	Pier Ave Deep	Paso Robles	6/29/1972	4.35	Flush	Top Flush Mount	13.53	9.18
32S/13E-30N02	Pier Ave Deep	Paso Robles	2/29/1972	0.00	Flush	Top Flush Mount	13.53	13.53
32S/13E-30N02	Pier Ave Deep	Paso Robles	11/29/1971	0.00	Flush	Top Flush Mount	13.53	13.53
32S/13E-30N02	Pier Ave Deep	Paso Robles	8/26/1971	3.00	Flush	Top Flush Mount	13.53	10.53
32S/13E-30N02	Pier Ave Deep	Paso Robles	6/2/1971	0.88	Flush	Top Flush Mount	13.53	12.65
32S/13E-30N02	Pier Ave Deep	Paso Robles	3/2/1971	0.00	Flush	Top Flush Mount	13.53	13.53
32S/13E-30N02	Pier Ave Deep	Paso Robles	12/15/1969	0.00	Flush	Top Flush Mount	13.53	13.53
32S/13E-30N02	Pier Ave Deep	Paso Robles	6/24/1969	0.00	Flush	Top Flush Mount	13.53	13.53
32S/13E-30N02	Pier Ave Deep	Paso Robles	5/22/1969	1.48	Flush	Top Flush Mount	13.53	12.05
32S/13E-30N02	Pier Ave Deep	Paso Robles	4/18/1969	0.00	Flush	Top Flush Mount	13.53	13.53
32S/13E-30N02	Pier Ave Deep	Paso Robles	3/20/1969	0.00	Flush	Top Flush Mount	13.53	13.53

## Appendix A: NCMA Sentry Wells Water Level Data



Well	Common Name	Aquifer	Date	Depth to Water (feet)	Surface Completion	RP Description	RP Elev, feet NAVD88	Groundwater Elevation (feet VD88)
32S/13E-30N02	Pier Ave Deep	Paso Robles	2/21/1969	0.00	Flush	Top Flush Mount	13.53	13.53
32S/13E-30N02	Pier Ave Deep	Paso Robles	1/15/1969	2.41	Flush	Top Flush Mount	13.53	11.12
32S/13E-30N02	Pier Ave Deep	Paso Robles	12/12/1968	4.12	Flush	Top Flush Mount	13.53	9.41
32S/13E-30N02	Pier Ave Deep	Paso Robles	11/14/1968	5.48	Flush	Top Flush Mount	13.53	8.05
32S/13E-30N02	Pier Ave Deep	Paso Robles	10/17/1968	8.06	Flush	Top Flush Mount	13.53	5.47
32S/13E-30N02	Pier Ave Deep	Paso Robles	9/14/1968	9.22	Flush	Top Flush Mount	13.53	4.31
32S/13E-30N02	Pier Ave Deep	Paso Robles	8/13/1968	8.47	Flush	Top Flush Mount	13.53	5.06
32S/13E-30N02	Pier Ave Deep	Paso Robles	4/20/1968	0.00	Flush	Top Flush Mount	13.53	13.53
32S/13E-30N02	Pier Ave Deep	Paso Robles	3/21/1968	1.37	Flush	Top Flush Mount	13.53	12.16
32S/13E-30N02	Pier Ave Deep	Paso Robles	2/22/1968	0.74	Flush	Top Flush Mount	13.53	12.79
32S/13E-30N02	Pier Ave Deep	Paso Robles	1/17/1968	1.02	Flush	Top Flush Mount	13.53	12.51
32S/13E-30N02	Pier Ave Deep	Paso Robles	12/8/1967	2.14	Flush	Top Flush Mount	13.53	11.39
32S/13E-30N02	Pier Ave Deep	Paso Robles	11/13/1967	4.04	Flush	Top Flush Mount	13.53	9.49
32S/13E-30N02	Pier Ave Deep	Paso Robles	10/9/1967	4.46	Flush	Top Flush Mount	13.53	9.07
32S/13E-30N02	Pier Ave Deep	Paso Robles	9/5/1967	5.03	Flush	Top Flush Mount	13.53	8.50
32S/13E-30N02	Pier Ave Deep	Paso Robles	8/8/1967	4.71	Flush	Top Flush Mount	13.53	8.82
32S/13E-30N02	Pier Ave Deep	Paso Robles	7/12/1967	1.77	Flush	Top Flush Mount	13.53	11.76
32S/13E-30N02	Pier Ave Deep	Paso Robles	6/1/1967	1.90	Flush	Top Flush Mount	13.53	11.63
32S/13E-30N02	Pier Ave Deep	Paso Robles	5/2/1967	0.00	Flush	Top Flush Mount	13.53	13.53



## Appendix A: NCMA Sentry Wells Water Level Data



Well	Common Name	Aquifer	Date	Depth to Water (feet)	Surface Completion	RP Description	RP Elev, feet NAVD88	Groundwater Elevation (feet VD88)
32S/13E-31H10	Oceano Green	Paso Robles	10/5/2021	29.59	Manhole	Top Flush Mount	34.63	5.04
32S/13E-31H10	Oceano Green	Paso Robles	7/13/2021	29.37	Manhole	Top Flush Mount	34.63	5.26
32S/13E-31H10	Oceano Green	Paso Robles	4/6/2021	25.86	Manhole	Top Flush Mount	34.63	8.77
32S/13E-31H10	Oceano Green	Paso Robles	1/6/2021	24.16	Manhole	Top Flush Mount	34.63	10.47
32S/13E-31H10	Oceano Green	Paso Robles	10/7/2020	28.77	Manhole	Top Flush Mount	34.63	5.86
32S/13E-31H10	Oceano Green	Paso Robles	7/6/2020	25.99	Manhole	Top Flush Mount	34.63	8.64
32S/13E-31H10	Oceano Green	Paso Robles	4/7/2020	22.54	Manhole	Top Flush Mount	34.63	12.09
32S/13E-31H10	Oceano Green	Paso Robles	1/7/2020	24.03	Manhole	Top Flush Mount	34.63	10.60
32S/13E-31H10	Oceano Green	Paso Robles	10/9/2019	27.50	Manhole	Top Flush Mount	34.63	7.13
32S/13E-31H10	Oceano Green	Paso Robles	7/9/2019	28.68	Manhole	Top Flush Mount	34.63	5.95
32S/13E-31H10	Oceano Green	Paso Robles	4/9/2019	22.35	Manhole	Top Flush Mount	34.63	12.28
32S/13E-31H10	Oceano Green	Paso Robles	1/8/2019	24.48	Manhole	Top Flush Mount	34.63	10.15
32S/13E-31H10	Oceano Green	Paso Robles	10/9/2018	27.35	Manhole	Top Flush Mount	34.63	7.28
32S/13E-31H10	Oceano Green	Paso Robles	7/10/2018	27.94	Manhole	Top Flush Mount	34.63	6.69
32S/13E-31H10	Oceano Green	Paso Robles	4/10/2018	24.15	Manhole	Top Flush Mount	34.63	10.48
32S/13E-31H10	Oceano Green	Paso Robles	1/10/2018	24.15	Manhole	Top Flush Mount	34.63	10.48
32S/13E-31H10	Oceano Green	Paso Robles	10/10/2017	26.53	Manhole	Top Flush Mount	34.63	8.10
32S/13E-31H10	Oceano Green	Paso Robles	7/11/2017	25.11	Manhole	Top Flush Mount	34.63	9.52
32S/13E-31H10	Oceano Green	Paso Robles	4/11/2017	21.98	Manhole	Top Flush Mount	34.63	12.65
32S/13E-31H10	Oceano Green	Paso Robles	1/10/2017	24.50	Manhole	Top Flush Mount	34.63	10.13
32S/13E-31H10	Oceano Green	Paso Robles	10/12/2016	30.74	Manhole	Top Flush Mount	34.63	3.89
32S/13E-31H10	Oceano Green	Paso Robles	7/19/2016	29.77	Manhole	Top Flush Mount	34.63	4.86
32S/13E-31H10	Oceano Green	Paso Robles	4/12/2016	25.64	Manhole	Top Flush Mount	34.63	8.99
32S/13E-31H10	Oceano Green	Paso Robles	1/12/2016	20.83	Manhole	Top of Casing	30.49	9.66
32S/13E-31H10	Oceano Green	Paso Robles	10/13/2015	31.88	Manhole	Top Flush Mount	34.63	2.75
32S/13E-31H10	Oceano Green	Paso Robles	7/14/2015	31.61	Manhole	Top Flush Mount	34.63	3.02
32S/13E-31H10	Oceano Green	Paso Robles	4/14/2015	28.81	Manhole	Top Flush Mount	34.63	5.82
32S/13E-31H10	Oceano Green	Paso Robles	1/13/2015	26.11	Manhole	Top Flush Mount	34.63	8.52
32S/13E-31H10	Oceano Green	Paso Robles	10/14/2014	31.64	Manhole	Top Flush Mount	34.63	2.99
32S/13E-31H10	Oceano Green	Paso Robles	7/29/2014	32.30	Manhole	Top Flush Mount	34.63	2.33
32S/13E-31H10	Oceano Green	Paso Robles	6/4/2014	32.82	Manhole	Top Flush Mount	34.63	1.81
32S/13E-31H10	Oceano Green	Paso Robles	4/15/2014	27.98	Manhole	Top Flush Mount	34.63	6.65
32S/13E-31H10	Oceano Green	Paso Robles	1/14/2014	28.55	Manhole	Top Flush Mount	34.63	6.08

## Appendix A: NCMA Sentry Wells Water Level Data



Well	Common Name	Aquifer	Date	Depth to Water (feet)	Surface Completion	RP Description	RP Elev, feet NAVD88	Groundwater Elevation (feet VD88)
32S/13E-31H10	Oceano Green	Paso Robles	10/14/2013	30.31	Manhole	Top Flush Mount	34.63	4.32
32S/13E-31H10	Oceano Green	Paso Robles	7/9/2013	29.98	Manhole	Top Flush Mount	34.63	4.65
32S/13E-31H10	Oceano Green	Paso Robles	4/10/2013	23.30	Manhole	Top Flush Mount	34.63	11.33
32S/13E-31H10	Oceano Green	Paso Robles	1/14/2013	23.59	Manhole	Top Flush Mount	34.63	11.04
32S/13E-31H10	Oceano Green	Paso Robles	10/30/2012	27.31	Manhole	Top Flush Mount	34.63	7.32
32S/13E-31H10	Oceano Green	Paso Robles	7/25/2012	27.15	Manhole	Top Flush Mount	34.63	7.48
32S/13E-31H10	Oceano Green	Paso Robles	4/18/2012	21.65	Manhole	Top Flush Mount	34.63	12.98
32S/13E-31H10	Oceano Green	Paso Robles	1/12/2012	23.29	Manhole	Top Flush Mount	34.63	11.34
32S/13E-31H10	Oceano Green	Paso Robles	11/21/2011	22.46	Manhole	Top Flush Mount	34.63	12.17
32S/13E-31H10	Oceano Green	Paso Robles	7/26/2011	25.51	Manhole	Top Flush Mount	34.63	9.12
32S/13E-31H10	Oceano Green	Paso Robles	4/20/2011	114.79	Manhole	Top Flush Mount	34.63	-80.16
32S/13E-31H10	Oceano Green	Paso Robles	1/24/2011	106.59	Manhole	Top Flush Mount	34.63	-71.96
32S/13E-31H10	Oceano Green	Paso Robles	10/21/2010	112.71	Manhole	Top of Casing	30.49	-82.22
32S/13E-31H10	Oceano Green	Paso Robles	7/26/2010	95.61	Manhole	Top of Casing	30.49	-65.12
32S/13E-31H10	Oceano Green	Paso Robles	4/26/2010	63.90	Manhole	Top of Casing	30.49	-33.41
32S/13E-31H10	Oceano Green	Paso Robles	1/27/2010	43.71	Manhole	Top of Casing	30.49	-13.22
32S/13E-31H10	Oceano Green	Paso Robles	10/20/2009	29.20	Manhole	Top of Casing	30.49	1.29
32S/13E-31H10	Oceano Green	Paso Robles	8/19/2009	24.55	Manhole	Top of Casing	30.49	5.94
32S/13E-31H10	Oceano Green	Paso Robles	4/7/2009	28.12	Manhole	Top of Casing	30.49	2.37
32S/13E-31H10	Oceano Green	Paso Robles	10/15/2008	27.84	Manhole	Top of Casing	30.49	2.65
32S/13E-31H10	Oceano Green	Paso Robles	4/16/2008	26.82	Manhole	Top of Casing	30.49	3.67
32S/13E-31H10	Oceano Green	Paso Robles	10/18/2007	27.10	Manhole	Top of Casing	30.49	3.39
32S/13E-31H10	Oceano Green	Paso Robles	4/18/2007	25.15	Manhole	Top of Casing	30.49	5.34
32S/13E-31H10	Oceano Green	Paso Robles	10/16/2006	25.40	Manhole	Top of Casing	30.49	5.09
32S/13E-31H10	Oceano Green	Paso Robles	4/11/2006	25.60	Manhole	Top of Casing	30.49	4.89
32S/13E-31H10	Oceano Green	Paso Robles	10/31/2005	26.50	Manhole	Top of Casing	30.49	3.99
32S/13E-31H10	Oceano Green	Paso Robles	10/5/2001	20.10	Manhole	Top of Casing	30.49	10.39
32S/13E-31H10	Oceano Green	Paso Robles	4/25/2001	20.00	Manhole	Top of Casing	30.49	10.49
32S/13E-31H10	Oceano Green	Paso Robles	10/4/2000	20.90	Manhole	Top of Casing	30.49	9.59
32S/13E-31H10	Oceano Green	Paso Robles	4/14/2000	16.10	Manhole	Top of Casing	30.49	14.39
32S/13E-31H10	Oceano Green	Paso Robles	10/27/1999	21.40	Manhole	Top of Casing	30.49	9.09
32S/13E-31H10	Oceano Green	Paso Robles	10/23/1998	19.80	Manhole	Top of Casing	30.49	10.69
32S/13E-31H10	Oceano Green	Paso Robles	10/21/1998	19.50	Manhole	Top of Casing	30.49	10.99

## Appendix A: NCMA Sentry Wells Water Level Data



Well	Common Name	Aquifer	Date	Depth to Water (feet)	Surface Completion	RP Description	RP Elev, feet NAVD88	Groundwater Elevation (feet VD88)
32S/13E-31H10	Oceano Green	Paso Robles	4/28/1997	20.30	Manhole	Top of Casing	30.49	10.19
32S/13E-31H10	Oceano Green	Paso Robles	4/16/1996	20.70	Manhole	Top of Casing	30.49	9.79
32S/13E-31H10	Oceano Green	Paso Robles	10/4/1995	211.90	Manhole	Top of Casing	30.49	-181.41
32S/13E-31H10	Oceano Green	Paso Robles	4/7/1995	22.50	Manhole	Top of Casing	30.49	7.99
32S/13E-31H10	Oceano Green	Paso Robles	4/13/1994	20.20	Manhole	Top of Casing	30.49	10.29
32S/13E-31H10	Oceano Green	Paso Robles	10/5/1993	21.10	Manhole	Top of Casing	30.49	9.39
32S/13E-31H10	Oceano Green	Paso Robles	4/6/1993	19.73	Manhole	Top of Casing	30.49	10.76
32S/13E-31H10	Oceano Green	Paso Robles	10/14/1992	23.69	Manhole	Top of Casing	30.49	6.8
32S/13E-31H10	Oceano Green	Paso Robles	4/15/1992	24.20	Manhole	Top of Casing	30.49	6.29
32S/13E-31H10	Oceano Green	Paso Robles	10/7/1991	26.10	Manhole	Top of Casing	30.49	4.39
32S/13E-31H10	Oceano Green	Paso Robles	4/4/1991	25.50	Manhole	Top of Casing	30.49	4.99
32S/13E-31H10	Oceano Green	Paso Robles	10/4/1990	25.70	Manhole	Top of Casing	30.49	4.79
32S/13E-31H10	Oceano Green	Paso Robles	4/11/1990	23.00	Manhole	Top of Casing	30.49	7.49
32S/13E-31H10	Oceano Green	Paso Robles	10/4/1989	24.60	Manhole	Top of Casing	30.49	5.89
32S/13E-31H10	Oceano Green	Paso Robles	10/3/1984	21.90	Manhole	Top of Casing	30.49	8.59
32S/13E-31H10	Oceano Green	Paso Robles	10/14/1983	17.55	Manhole	Top of Casing	30.49	12.94
32S/13E-31H10	Oceano Green	Paso Robles	5/16/1983	15.80	Manhole	Top of Casing	30.49	14.69

## Appendix A: NCMA Sentry Wells Water Level Data



Well	Common Name	Aquifer	Date	Depth to Water (feet)	Surface Completion	RP Description	RP Elev, feet NAVD88	Groundwater Elevation (feet VD88)
32S/13E-31H11	Oceano Blue	Paso Robles	10/5/2021	30.64	Manhole	Top Flush Mount	34.63	3.99
32S/13E-31H11	Oceano Blue	Paso Robles	7/13/2021	29.93	Manhole	Top Flush Mount	34.63	4.7
32S/13E-31H11	Oceano Blue	Paso Robles	4/6/2021	26.22	Manhole	Top Flush Mount	34.63	8.41
32S/13E-31H11	Oceano Blue	Paso Robles	1/6/2021	26.51	Manhole	Top Flush Mount	34.63	8.12
32S/13E-31H11	Oceano Blue	Paso Robles	10/7/2020	29.71	Manhole	Top Flush Mount	34.63	4.92
32S/13E-31H11	Oceano Blue	Paso Robles	7/6/2020	27.07	Manhole	Top Flush Mount	34.63	7.56
32S/13E-31H11	Oceano Blue	Paso Robles	4/7/2020	22.42	Manhole	Top Flush Mount	34.63	12.21
32S/13E-31H11	Oceano Blue	Paso Robles	1/7/2020	23.73	Manhole	Top Flush Mount	34.63	10.9
32S/13E-31H11	Oceano Blue	Paso Robles	10/9/2019	28.31	Manhole	Top Flush Mount	34.63	6.32
32S/13E-31H11	Oceano Blue	Paso Robles	7/9/2019	26.69	Manhole	Top Flush Mount	34.63	7.94
32S/13E-31H11	Oceano Blue	Paso Robles	4/9/2019	22.61	Manhole	Top Flush Mount	34.63	12.02
32S/13E-31H11	Oceano Blue	Paso Robles	1/8/2019	25.18	Manhole	Top Flush Mount	34.63	9.45
32S/13E-31H11	Oceano Blue	Paso Robles	10/9/2018	28.82	Manhole	Top Flush Mount	34.63	5.81
32S/13E-31H11	Oceano Blue	Paso Robles	7/10/2018	28.60	Manhole	Top Flush Mount	34.63	6.03
32S/13E-31H11	Oceano Blue	Paso Robles	4/10/2018	23.98	Manhole	Top Flush Mount	34.63	10.65
32S/13E-31H11	Oceano Blue	Paso Robles	1/10/2018	25.08	Manhole	Top Flush Mount	34.63	9.55
32S/13E-31H11	Oceano Blue	Paso Robles	10/10/2017	28.03	Manhole	Top Flush Mount	34.63	6.6
32S/13E-31H11	Oceano Blue	Paso Robles	7/11/2017	26.18	Manhole	Top Flush Mount	34.63	8.45
32S/13E-31H11	Oceano Blue	Paso Robles	4/11/2017	21.90	Manhole	Top Flush Mount	34.63	12.73
32S/13E-31H11	Oceano Blue	Paso Robles	1/10/2017	25.00	Manhole	Top Flush Mount	34.63	9.63
32S/13E-31H11	Oceano Blue	Paso Robles	10/12/2016	30.74	Manhole	Top Flush Mount	34.63	3.89
32S/13E-31H11	Oceano Blue	Paso Robles	7/19/2016	29.62	Manhole	Top Flush Mount	34.63	5.01
32S/13E-31H11	Oceano Blue	Paso Robles	4/12/2016	25.13	Manhole	Top Flush Mount	34.63	9.50
32S/13E-31H11	Oceano Blue	Paso Robles	1/12/2016	22.00	Manhole	Top of Casing	30.54	8.54
32S/13E-31H11	Oceano Blue	Paso Robles	10/13/2015	32.70	Manhole	Top Flush Mount	34.63	1.93
32S/13E-31H11	Oceano Blue	Paso Robles	7/14/2015	32.21	Manhole	Top Flush Mount	34.63	2.42
32S/13E-31H11	Oceano Blue	Paso Robles	4/14/2015	28.41	Manhole	Top Flush Mount	34.63	6.22
32S/13E-31H11	Oceano Blue	Paso Robles	1/13/2015	25.98	Manhole	Top Flush Mount	34.63	8.65
32S/13E-31H11	Oceano Blue	Paso Robles	10/14/2014	32.70	Manhole	Top Flush Mount	34.63	1.93
32S/13E-31H11	Oceano Blue	Paso Robles	7/29/2014	32.69	Manhole	Top Flush Mount	34.63	1.94
32S/13E-31H11	Oceano Blue	Paso Robles	6/4/2014	34.02	Manhole	Top Flush Mount	34.63	0.61
32S/13E-31H11	Oceano Blue	Paso Robles	4/15/2014	27.07	Manhole	Top Flush Mount	34.63	7.56
32S/13E-31H11	Oceano Blue	Paso Robles	1/14/2014	27.86	Manhole	Top Flush Mount	34.63	6.77

## Appendix A: NCMA Sentry Wells Water Level Data



Well	Common Name	Aquifer	Date	Depth to Water (feet)	Surface Completion	RP Description	RP Elev, feet NAVD88	Groundwater Elevation (feet VD88)
32S/13E-31H11	Oceano Blue	Paso Robles	10/14/2013	30.98	Manhole	Top Flush Mount	34.63	3.65
32S/13E-31H11	Oceano Blue	Paso Robles	7/9/2013	29.36	Manhole	Top Flush Mount	34.63	5.27
32S/13E-31H11	Oceano Blue	Paso Robles	4/10/2013	24.45	Manhole	Top Flush Mount	34.63	10.18
32S/13E-31H11	Oceano Blue	Paso Robles	1/14/2013	23.14	Manhole	Top Flush Mount	34.63	11.49
32S/13E-31H11	Oceano Blue	Paso Robles	10/30/2012	27.68	Manhole	Top Flush Mount	34.63	6.95
32S/13E-31H11	Oceano Blue	Paso Robles	7/25/2012	27.18	Manhole	Top Flush Mount	34.63	7.45
32S/13E-31H11	Oceano Blue	Paso Robles	4/18/2012	20.10	Manhole	Top Flush Mount	34.63	14.53
32S/13E-31H11	Oceano Blue	Paso Robles	1/12/2012	22.26	Manhole	Top Flush Mount	34.63	12.37
32S/13E-31H11	Oceano Blue	Paso Robles	11/21/2011	22.73	Manhole	Top Flush Mount	34.63	11.90
32S/13E-31H11	Oceano Blue	Paso Robles	7/26/2011	25.29	Manhole	Top Flush Mount	34.63	9.34
32S/13E-31H11	Oceano Blue	Paso Robles	4/20/2011	22.59	Manhole	Top Flush Mount	34.63	12.04
32S/13E-31H11	Oceano Blue	Paso Robles	1/24/2011	24.87	Manhole	Top Flush Mount	34.63	9.76
32S/13E-31H11	Oceano Blue	Paso Robles	10/21/2010	30.11	Manhole	Top of Casing	30.54	0.43
32S/13E-31H11	Oceano Blue	Paso Robles	7/26/2010	24.74	Manhole	Top of Casing	30.54	5.80
32S/13E-31H11	Oceano Blue	Paso Robles	4/26/2010	18.52	Manhole	Top of Casing	30.54	12.02
32S/13E-31H11	Oceano Blue	Paso Robles	1/27/2010	22.06	Manhole	Top of Casing	30.54	8.48
32S/13E-31H11	Oceano Blue	Paso Robles	10/20/2009	27.50	Manhole	Top of Casing	30.54	3.04
32S/13E-31H11	Oceano Blue	Paso Robles	8/19/2009	24.65	Manhole	Top of Casing	30.54	5.89
32S/13E-31H11	Oceano Blue	Paso Robles	4/7/2009	27.65	Manhole	Top of Casing	30.54	2.89
32S/13E-31H11	Oceano Blue	Paso Robles	10/15/2008	29.29	Manhole	Top of Casing	30.54	1.25
32S/13E-31H11	Oceano Blue	Paso Robles	4/16/2008	26.98	Manhole	Top of Casing	30.54	3.56
32S/13E-31H11	Oceano Blue	Paso Robles	10/18/2007	28.20	Manhole	Top of Casing	30.54	2.34
32S/13E-31H11	Oceano Blue	Paso Robles	4/18/2007	24.75	Manhole	Top of Casing	30.54	5.79
32S/13E-31H11	Oceano Blue	Paso Robles	10/16/2006	25.60	Manhole	Top of Casing	30.54	4.94
32S/13E-31H11	Oceano Blue	Paso Robles	4/11/2006	24.10	Manhole	Top of Casing	30.54	6.44
32S/13E-31H11	Oceano Blue	Paso Robles	10/31/2005	26.35	Manhole	Top of Casing	30.54	4.19
32S/13E-31H11	Oceano Blue	Paso Robles	10/5/2001	18.20	Manhole	Top of Casing	30.54	12.34
32S/13E-31H11	Oceano Blue	Paso Robles	4/25/2001	16.80	Manhole	Top of Casing	30.54	13.74
32S/13E-31H11	Oceano Blue	Paso Robles	10/4/2000	19.10	Manhole	Top of Casing	30.54	11.44
32S/13E-31H11	Oceano Blue	Paso Robles	4/14/2000	12.40	Manhole	Top of Casing	30.54	18.14
32S/13E-31H11	Oceano Blue	Paso Robles	10/27/1999	17.10	Manhole	Top of Casing	30.54	13.44
32S/13E-31H11	Oceano Blue	Paso Robles	10/21/1998	16.20	Manhole	Top of Casing	30.54	14.34
32S/13E-31H11	Oceano Blue	Paso Robles	4/23/1998	14.70	Manhole	Top of Casing	30.54	15.84

## Appendix A: NCMA Sentry Wells Water Level Data



Well	Common Name	Aquifer	Date	Depth to Water (feet)	Surface Completion	RP Description	RP Elev, feet NAVD88	Groundwater Elevation (feet VD88)
32S/13E-31H11	Oceano Blue	Paso Robles	10/22/1997	23.20	Manhole	Top of Casing	30.54	7.34
32S/13E-31H11	Oceano Blue	Paso Robles	4/28/1997	18.00	Manhole	Top of Casing	30.54	12.54
32S/13E-31H11	Oceano Blue	Paso Robles	4/16/1996	17.90	Manhole	Top of Casing	30.54	12.64
32S/13E-31H11	Oceano Blue	Paso Robles	10/4/1995	20.00	Manhole	Top of Casing	30.54	10.54
32S/13E-31H11	Oceano Blue	Paso Robles	4/7/1995	16.60	Manhole	Top of Casing	30.54	13.94
32S/13E-31H11	Oceano Blue	Paso Robles	4/13/1994	20.90	Manhole	Top of Casing	30.54	9.64
32S/13E-31H11	Oceano Blue	Paso Robles	10/5/1993	21.80	Manhole	Top of Casing	30.54	8.74
32S/13E-31H11	Oceano Blue	Paso Robles	4/6/1993	18.92	Manhole	Top of Casing	30.54	11.62
32S/13E-31H11	Oceano Blue	Paso Robles	10/14/1992	25.46	Manhole	Top of Casing	30.54	5.08
32S/13E-31H11	Oceano Blue	Paso Robles	4/14/1992	21.90	Manhole	Top of Casing	30.54	8.64
32S/13E-31H11	Oceano Blue	Paso Robles	10/7/1991	25.30	Manhole	Top of Casing	30.54	5.24
32S/13E-31H11	Oceano Blue	Paso Robles	4/4/1991	24.10	Manhole	Top of Casing	30.54	6.44
32S/13E-31H11	Oceano Blue	Paso Robles	10/4/1990	27.00	Manhole	Top of Casing	30.54	3.54
32S/13E-31H11	Oceano Blue	Paso Robles	4/11/1990	22.50	Manhole	Top of Casing	30.54	8.04
32S/13E-31H11	Oceano Blue	Paso Robles	10/4/1989	23.70	Manhole	Top of Casing	30.54	6.84
32S/13E-31H11	Oceano Blue	Paso Robles	10/13/1984	23.30	Manhole	Top of Casing	30.54	7.24
32S/13E-31H11	Oceano Blue	Paso Robles	10/3/1984	23.30	Manhole	Top of Casing	30.54	7.24
32S/13E-31H11	Oceano Blue	Paso Robles	10/14/1983	16.18	Manhole	Top of Casing	30.54	14.36
32S/13E-31H11	Oceano Blue	Paso Robles	5/16/1983	13.30	Manhole	Top of Casing	30.54	17.24



# Appendix A: NCMA Sentry Wells Water Level Data



Well	Common Name	Aquifer	Date	Depth to Water (feet)	Surface Completion	RP Description	RP Elev, feet NAVD88	Groundwater Elevation (feet VD88)
32S/13E-31H12	Oceano Silver	Careaga	10/5/2021	37.64	Manhole	Top Flush Mount	34.63	-3.01
32S/13E-31H12	Oceano Silver	Careaga	7/13/2021	34.71	Manhole	Top Flush Mount	34.63	-0.08
32S/13E-31H12	Oceano Silver	Careaga	4/6/2021	25.26	Manhole	Top Flush Mount	34.63	9.37
32S/13E-31H12	Oceano Silver	Careaga	1/6/2021	25.17	Manhole	Top Flush Mount	34.63	9.46
32S/13E-31H12	Oceano Silver	Careaga	10/7/2020	28.34	Manhole	Top Flush Mount	34.63	6.29
32S/13E-31H12	Oceano Silver	Careaga	7/6/2020	24.92	Manhole	Top Flush Mount	34.63	9.71
32S/13E-31H12	Oceano Silver	Careaga	4/7/2020	21.35	Manhole	Top Flush Mount	34.63	13.28
32S/13E-31H12	Oceano Silver	Careaga	1/7/2020	22.71	Manhole	Top Flush Mount	34.63	11.92
32S/13E-31H12	Oceano Silver	Careaga	10/9/2019	26.50	Manhole	Top Flush Mount	34.63	8.13
32S/13E-31H12	Oceano Silver	Careaga	7/9/2019	24.59	Manhole	Top Flush Mount	34.63	10.04
32S/13E-31H12	Oceano Silver	Careaga	4/9/2019	27.90	Manhole	Top Flush Mount	34.63	6.73
32S/13E-31H12	Oceano Silver	Careaga	1/8/2019	28.15	Manhole	Top Flush Mount	34.63	6.48
32S/13E-31H12	Oceano Silver	Careaga	10/9/2018	39.15	Manhole	Top Flush Mount	34.63	-4.52
32S/13E-31H12	Oceano Silver	Careaga	7/10/2018	28.92	Manhole	Top Flush Mount	34.63	5.71
32S/13E-31H12	Oceano Silver	Careaga	4/10/2018	23.50	Manhole	Top Flush Mount	34.63	11.13
32S/13E-31H12	Oceano Silver	Careaga	1/10/2018	23.90	Manhole	Top Flush Mount	34.63	10.73
32S/13E-31H12	Oceano Silver	Careaga	10/10/2017	28.06	Manhole	Top Flush Mount	34.63	6.57
32S/13E-31H12	Oceano Silver	Careaga	7/11/2017	24.09	Manhole	Top Flush Mount	34.63	10.54
32S/13E-31H12	Oceano Silver	Careaga	4/11/2017	21.14	Manhole	Top Flush Mount	34.63	13.49
32S/13E-31H12	Oceano Silver	Careaga	1/10/2017	24.80	Manhole	Top Flush Mount	34.63	9.83
32S/13E-31H12	Oceano Silver	Careaga	10/12/2016	31.00	Manhole	Top Flush Mount	34.63	3.63
32S/13E-31H12	Oceano Silver	Careaga	7/19/2016	26.95	Manhole	Top of Casing	30.48	3.53
32S/13E-31H12	Oceano Silver	Careaga	4/12/2016	25.32	Manhole	Top Flush Mount	34.63	9.31
32S/13E-31H12	Oceano Silver	Careaga	1/12/2016	21.44	Manhole	Top of Casing	30.48	9.04
32S/13E-31H12	Oceano Silver	Careaga	10/13/2015	32.30	Manhole	Top Flush Mount	34.63	2.33
32S/13E-31H12	Oceano Silver	Careaga	7/14/2015	32.58	Manhole	Top Flush Mount	34.63	2.05
32S/13E-31H12	Oceano Silver	Careaga	4/14/2015	30.38	Manhole	Top Flush Mount	34.63	4.25
32S/13E-31H12	Oceano Silver	Careaga	1/13/2015	26.19	Manhole	Top Flush Mount	34.63	8.44
32S/13E-31H12	Oceano Silver	Careaga	10/14/2014	43.01	Manhole	Top Flush Mount	34.63	-8.38
32S/13E-31H12	Oceano Silver	Careaga	7/29/2014	33.65	Manhole	Top Flush Mount	34.63	0.98
32S/13E-31H12	Oceano Silver	Careaga	6/4/2014	36.33	Manhole	Top Flush Mount	34.63	-1.70
32S/13E-31H12	Oceano Silver	Careaga	4/15/2014	42.20	Manhole	Top Flush Mount	34.63	-7.57
32S/13E-31H12	Oceano Silver	Careaga	1/14/2014	27.78	Manhole	Top Flush Mount	34.63	6.85

## Appendix A: NCMA Sentry Wells Water Level Data



Well	Common Name	Aquifer	Date	Depth to Water (feet)	Surface Completion	RP Description	RP Elev, feet NAVD88	Groundwater Elevation (feet VD88)
32S/13E-31H12	Oceano Silver	Careaga	10/14/2013	30.92	Manhole	Top Flush Mount	34.63	3.71
32S/13E-31H12	Oceano Silver	Careaga	7/9/2013	30.91	Manhole	Top Flush Mount	34.63	3.72
32S/13E-31H12	Oceano Silver	Careaga	4/10/2013	26.08	Manhole	Top Flush Mount	34.63	8.55
32S/13E-31H12	Oceano Silver	Careaga	1/14/2013	23.12	Manhole	Top Flush Mount	34.63	11.51
32S/13E-31H12	Oceano Silver	Careaga	10/30/2012	27.14	Manhole	Top Flush Mount	34.63	7.49
32S/13E-31H12	Oceano Silver	Careaga	7/25/2012	27.68	Manhole	Top Flush Mount	34.63	6.95
32S/13E-31H12	Oceano Silver	Careaga	4/18/2012	20.13	Manhole	Top Flush Mount	34.63	14.5
32S/13E-31H12	Oceano Silver	Careaga	1/11/2012	23.00	Manhole	Top Flush Mount	34.63	11.63
32S/13E-31H12	Oceano Silver	Careaga	11/21/2011	22.85	Manhole	Top Flush Mount	34.63	11.78
32S/13E-31H12	Oceano Silver	Careaga	7/26/2011	25.23	Manhole	Top Flush Mount	34.63	9.4
32S/13E-31H12	Oceano Silver	Careaga	4/20/2011	21.27	Manhole	Top Flush Mount	34.63	13.36
32S/13E-31H12	Oceano Silver	Careaga	1/24/2011	22.02	Manhole	Top Flush Mount	34.63	12.61
32S/13E-31H12	Oceano Silver	Careaga	10/21/2010	29.11	Manhole	Top Flush Mount	34.63	5.52
32S/13E-31H12	Oceano Silver	Careaga	7/26/2010	24.24	Manhole	Well Casing	30.48	6.24
32S/13E-31H12	Oceano Silver	Careaga	4/26/2010	19.04	Manhole	Well Casing	30.48	11.44
32S/13E-31H12	Oceano Silver	Careaga	1/27/2010	21.05	Manhole	Well Casing	30.48	9.43
32S/13E-31H12	Oceano Silver	Careaga	10/20/2009	27.52	Manhole	Well Casing	30.48	2.96
32S/13E-31H12	Oceano Silver	Careaga	8/19/2009	29.34	Manhole	Well Casing	30.48	1.14
32S/13E-31H12	Oceano Silver	Careaga	4/7/2009	31.32	Manhole	Well Casing	30.48	-0.84
32S/13E-31H12	Oceano Silver	Careaga	10/15/2008	41.62	Manhole	Well Casing	30.48	-11.14
32S/13E-31H12	Oceano Silver	Careaga	4/16/2008	29.70	Manhole	Well Casing	30.48	0.78
32S/13E-31H12	Oceano Silver	Careaga	10/19/2007	33.15	Manhole	Well Casing	30.48	-2.67
32S/13E-31H12	Oceano Silver	Careaga	4/18/2007	26.30	Manhole	Well Casing	30.48	4.18
32S/13E-31H12	Oceano Silver	Careaga	10/16/2006	27.30	Manhole	Well Casing	30.48	3.18
32S/13E-31H12	Oceano Silver	Careaga	4/11/2006	22.70	Manhole	Well Casing	30.48	7.78
32S/13E-31H12	Oceano Silver	Careaga	10/31/2005	30.10	Manhole	Well Casing	30.48	0.38
32S/13E-31H12	Oceano Silver	Careaga	10/5/2001	18.10	Manhole	Well Casing	30.48	12.38
32S/13E-31H12	Oceano Silver	Careaga	4/25/2001	15.90	Manhole	Well Casing	30.48	14.58
32S/13E-31H12	Oceano Silver	Careaga	10/4/2000	21.60	Manhole	Well Casing	30.48	8.88
32S/13E-31H12	Oceano Silver	Careaga	4/14/2000	17.00	Manhole	Well Casing	30.48	13.48
32S/13E-31H12	Oceano Silver	Careaga	10/27/1999	24.10	Manhole	Well Casing	30.48	6.38
32S/13E-31H12	Oceano Silver	Careaga	10/21/1998	26.60	Manhole	Well Casing	30.48	3.88
32S/13E-31H12	Oceano Silver	Careaga	4/23/1998	16.80	Manhole	Well Casing	30.48	13.68

## Appendix A: NCMA Sentry Wells Water Level Data



Well	Common Name	Aquifer	Date	Depth to Water (feet)	Surface Completion	RP Description	RP Elev, feet NAVD88	Groundwater Elevation (feet VD88)
32S/13E-31H12	Oceano Silver	Careaga	10/22/1997	32.20	Manhole	Well Casing	30.48	-1.72
32S/13E-31H12	Oceano Silver	Careaga	4/28/1997	33.50	Manhole	Well Casing	30.48	-3.02
32S/13E-31H12	Oceano Silver	Careaga	4/16/1996	29.20	Manhole	Well Casing	30.48	1.28
32S/13E-31H12	Oceano Silver	Careaga	10/4/1995	34.90	Manhole	Well Casing	30.48	-4.42
32S/13E-31H12	Oceano Silver	Careaga	4/7/1995	29.50	Manhole	Well Casing	30.48	0.98
32S/13E-31H12	Oceano Silver	Careaga	4/13/1994	35.30	Manhole	Well Casing	30.48	-4.82
32S/13E-31H12	Oceano Silver	Careaga	10/5/1993	28.30	Manhole	Well Casing	30.48	2.18
32S/13E-31H12	Oceano Silver	Careaga	4/6/1993	19.47	Manhole	Well Casing	30.48	11.01
32S/13E-31H12	Oceano Silver	Careaga	10/14/1992	30.34	Manhole	Well Casing	30.48	0.14
32S/13E-31H12	Oceano Silver	Careaga	4/14/1992	25.23	Manhole	Well Casing	30.48	5.25
32S/13E-31H12	Oceano Silver	Careaga	10/7/1991	30.50	Manhole	Well Casing	30.48	-0.02
32S/13E-31H12	Oceano Silver	Careaga	4/4/1991	23.12	Manhole	Well Casing	30.48	7.36
32S/13E-31H12	Oceano Silver	Careaga	10/4/1990	29.70	Manhole	Well Casing	30.48	0.78
32S/13E-31H12	Oceano Silver	Careaga	4/11/1990	44.00	Manhole	Well Casing	30.48	-13.52
32S/13E-31H12	Oceano Silver	Careaga	10/4/1989	25.80	Manhole	Well Casing	30.48	4.68
32S/13E-31H12	Oceano Silver	Careaga	10/3/1984	26.80	Manhole	Well Casing	30.48	3.68
32S/13E-31H12	Oceano Silver	Careaga	5/16/1983	13.50	Manhole	Well Casing	30.48	16.98

## Appendix A: NCMA Sentry Wells Water Level Data



Well	Common Name	Aquifer	Date	Depth to Water (feet)	Surface Completion	RP Description	RP Elev, feet NAVD88	Groundwater Elevation (feet VD88)
32S/13E-31H13	Oceano Yellow	Careaga	10/5/2021	37.03	Manhole	Top Flush Mount	34.63	-2.4
32S/13E-31H13	Oceano Yellow	Careaga	7/13/2021	33.74	Manhole	Top Flush Mount	34.63	0.89
32S/13E-31H13	Oceano Yellow	Careaga	4/6/2021	25.09	Manhole	Top Flush Mount	34.63	9.54
32S/13E-31H13	Oceano Yellow	Careaga	1/6/2021	25.03	Manhole	Top Flush Mount	34.63	9.6
32S/13E-31H13	Oceano Yellow	Careaga	10/7/2020	28.13	Manhole	Top Flush Mount	34.63	6.5
32S/13E-31H13	Oceano Yellow	Careaga	7/6/2020	24.64	Manhole	Top Flush Mount	34.63	9.99
32S/13E-31H13	Oceano Yellow	Careaga	4/7/2020	21.03	Manhole	Top Flush Mount	34.63	13.6
32S/13E-31H13	Oceano Yellow	Careaga	1/7/2020	22.63	Manhole	Top Flush Mount	34.63	12
32S/13E-31H13	Oceano Yellow	Careaga	10/9/2019	26.35	Manhole	Top Flush Mount	34.63	8.28
32S/13E-31H13	Oceano Yellow	Careaga	7/9/2019	24.47	Manhole	Top Flush Mount	34.63	10.16
32S/13E-31H13	Oceano Yellow	Careaga	4/9/2019	28.05	Manhole	Top Flush Mount	34.63	6.58
32S/13E-31H13	Oceano Yellow	Careaga	1/8/2019	28.35	Manhole	Top Flush Mount	34.63	6.28
32S/13E-31H13	Oceano Yellow	Careaga	10/9/2018	37.38	Manhole	Top Flush Mount	34.63	-2.75
32S/13E-31H13	Oceano Yellow	Careaga	7/10/2018	28.90	Manhole	Top Flush Mount	34.63	5.73
32S/13E-31H13	Oceano Yellow	Careaga	4/10/2018	23.55	Manhole	Top Flush Mount	34.63	11.08
32S/13E-31H13	Oceano Yellow	Careaga	1/10/2018	23.85	Manhole	Top Flush Mount	34.63	10.78
32S/13E-31H13	Oceano Yellow	Careaga	10/10/2017	27.96	Manhole	Top Flush Mount	34.63	6.67
32S/13E-31H13	Oceano Yellow	Careaga	7/11/2017	23.68	Manhole	Top Flush Mount	34.63	10.95
32S/13E-31H13	Oceano Yellow	Careaga	4/11/2017	21.18	Manhole	Top Flush Mount	34.63	13.45
32S/13E-31H13	Oceano Yellow	Careaga	1/10/2017	24.79	Manhole	Top Flush Mount	34.63	9.84
32S/13E-31H13	Oceano Yellow	Careaga	10/12/2016	30.91	Manhole	Top Flush Mount	34.63	3.72
32S/13E-31H13	Oceano Yellow	Careaga	7/19/2016	29.58	Manhole	Top Flush Mount	34.63	5.05
32S/13E-31H13	Oceano Yellow	Careaga	4/12/2016	25.25	Manhole	Top Flush Mount	34.63	9.38
32S/13E-31H13	Oceano Yellow	Careaga	1/12/2016	21.66	Manhole	Top of Casing	30.52	8.86
32S/13E-31H13	Oceano Yellow	Careaga	10/13/2015	32.28	Manhole	Top Flush Mount	34.63	2.35
32S/13E-31H13	Oceano Yellow	Careaga	7/14/2015	32.60	Manhole	Top Flush Mount	34.63	2.03
32S/13E-31H13	Oceano Yellow	Careaga	4/14/2015	30.42	Manhole	Top Flush Mount	34.63	4.21
32S/13E-31H13	Oceano Yellow	Careaga	1/13/2015	26.32	Manhole	Top Flush Mount	34.63	8.31
32S/13E-31H13	Oceano Yellow	Careaga	10/14/2014	41.12	Manhole	Top Flush Mount	34.63	-6.49
32S/13E-31H13	Oceano Yellow	Careaga	7/29/2014	33.72	Manhole	Top Flush Mount	34.63	0.91
32S/13E-31H13	Oceano Yellow	Careaga	6/4/2014	36.55	Manhole	Top Flush Mount	34.63	-1.92
32S/13E-31H13	Oceano Yellow	Careaga	4/15/2014	39.06	Manhole	Top Flush Mount	34.63	-4.43
32S/13E-31H13	Oceano Yellow	Careaga	1/14/2014	27.80	Manhole	Top Flush Mount	34.63	6.83

## Appendix A: NCMA Sentry Wells Water Level Data



Well	Common Name	Aquifer	Date	Depth to Water (feet)	Surface Completion	RP Description	RP Elev, feet NAVD88	Groundwater Elevation (feet VD88)
32S/13E-31H13	Oceano Yellow	Careaga	10/14/2013	30.83	Manhole	Top Flush Mount	34.63	3.80
32S/13E-31H13	Oceano Yellow	Careaga	7/9/2013	30.41	Manhole	Top Flush Mount	34.63	4.22
32S/13E-31H13	Oceano Yellow	Careaga	4/10/2013	26.09	Manhole	Top Flush Mount	34.63	8.54
32S/13E-31H13	Oceano Yellow	Careaga	1/14/2013	23.25	Manhole	Top Flush Mount	34.63	11.38
32S/13E-31H13	Oceano Yellow	Careaga	10/30/2012	27.23	Manhole	Top Flush Mount	34.63	7.40
32S/13E-31H13	Oceano Yellow	Careaga	7/25/2012	27.69	Manhole	Top Flush Mount	34.63	6.94
32S/13E-31H13	Oceano Yellow	Careaga	4/18/2012	20.05	Manhole	Top Flush Mount	34.63	14.58
32S/13E-31H13	Oceano Yellow	Careaga	1/12/2012	23.08	Manhole	Top Flush Mount	34.63	11.55
32S/13E-31H13	Oceano Yellow	Careaga	11/21/2011	22.98	Manhole	Top Flush Mount	34.63	11.65
32S/13E-31H13	Oceano Yellow	Careaga	7/26/2011	26.73	Manhole	Top Flush Mount	34.63	7.90
32S/13E-31H13	Oceano Yellow	Careaga	4/20/2011	21.30	Manhole	Top Flush Mount	34.63	13.33
32S/13E-31H13	Oceano Yellow	Careaga	1/24/2011	22.01	Manhole	Top Flush Mount	34.63	12.62
32S/13E-31H13	Oceano Yellow	Careaga	10/21/2010	28.22	Manhole	Well Casing	30.52	2.30
32S/13E-31H13	Oceano Yellow	Careaga	7/26/2010	25.50	Manhole	Well Casing	30.52	5.02
32S/13E-31H13	Oceano Yellow	Careaga	4/26/2010	19.17	Manhole	Well Casing	30.52	11.35
32S/13E-31H13	Oceano Yellow	Careaga	1/27/2010	20.58	Manhole	Well Casing	30.52	9.94
32S/13E-31H13	Oceano Yellow	Careaga	10/20/2009	25.80	Manhole	Well Casing	30.52	4.72
32S/13E-31H13	Oceano Yellow	Careaga	8/19/2009	31.04	Manhole	Well Casing	30.52	-0.52
32S/13E-31H13	Oceano Yellow	Careaga	4/7/2009	34.78	Manhole	Well Casing	30.52	-4.26
32S/13E-31H13	Oceano Yellow	Careaga	10/15/2008	37.72	Manhole	Well Casing	30.52	-7.20
32S/13E-31H13	Oceano Yellow	Careaga	4/16/2008	29.80	Manhole	Well Casing	30.52	0.72
32S/13E-31H13	Oceano Yellow	Careaga	10/19/2007	33.95	Manhole	Well Casing	30.52	-3.43
32S/13E-31H13	Oceano Yellow	Careaga	4/18/2007	27.50	Manhole	Well Casing	30.52	3.02
32S/13E-31H13	Oceano Yellow	Careaga	10/16/2006	27.50	Manhole	Well Casing	30.52	3.02
32S/13E-31H13	Oceano Yellow	Careaga	4/11/2006	26.85	Manhole	Well Casing	30.52	3.67
32S/13E-31H13	Oceano Yellow	Careaga	10/31/2005	28.05	Manhole	Well Casing	30.52	2.47
32S/13E-31H13	Oceano Yellow	Careaga	10/5/2001	22.80	Manhole	Well Casing	30.52	7.72
32S/13E-31H13	Oceano Yellow	Careaga	4/25/2001	22.60	Manhole	Well Casing	30.52	7.92
32S/13E-31H13	Oceano Yellow	Careaga	10/4/2000	26.50	Manhole	Well Casing	30.52	4.02
32S/13E-31H13	Oceano Yellow	Careaga	10/27/1999	34.80	Manhole	Well Casing	30.52	-4.28
32S/13E-31H13	Oceano Yellow	Careaga	10/21/1998	24.80	Manhole	Well Casing	30.52	5.72
32S/13E-31H13	Oceano Yellow	Careaga	4/23/1998	21.60	Manhole	Well Casing	30.52	8.92
32S/13E-31H13	Oceano Yellow	Careaga	10/22/1997	30.20	Manhole	Well Casing	30.52	0.32

## Appendix A: NCMA Sentry Wells Water Level Data



Well	Common Name	Aquifer	Date	Depth to Water (feet)	Surface Completion	RP Description	RP Elev, feet NAVD88	Groundwater Elevation (feet VD88)
32S/13E-31H13	Oceano Yellow	Careaga	4/28/1997	25.60	Manhole	Well Casing	30.52	4.92
32S/13E-31H13	Oceano Yellow	Careaga	4/16/1996	23.80	Manhole	Well Casing	30.52	6.72
32S/13E-31H13	Oceano Yellow	Careaga	10/4/1995	25.90	Manhole	Well Casing	30.52	4.62
32S/13E-31H13	Oceano Yellow	Careaga	4/7/1995	22.40	Manhole	Well Casing	30.52	8.12
32S/13E-31H13	Oceano Yellow	Careaga	4/13/1994	26.50	Manhole	Well Casing	30.52	4.02
32S/13E-31H13	Oceano Yellow	Careaga	10/5/1993	31.10	Manhole	Well Casing	30.52	-0.58
32S/13E-31H13	Oceano Yellow	Careaga	4/6/1993	26.90	Manhole	Well Casing	30.52	3.62
32S/13E-31H13	Oceano Yellow	Careaga	10/14/1992	34.05	Manhole	Well Casing	30.52	-3.53
32S/13E-31H13	Oceano Yellow	Careaga	4/14/1992	24.90	Manhole	Well Casing	30.52	5.62
32S/13E-31H13	Oceano Yellow	Careaga	10/7/1991	31.20	Manhole	Well Casing	30.52	-0.68
32S/13E-31H13	Oceano Yellow	Careaga	4/4/1991	24.60	Manhole	Well Casing	30.52	5.92
32S/13E-31H13	Oceano Yellow	Careaga	10/4/1990	34.20	Manhole	Well Casing	30.52	-3.68
32S/13E-31H13	Oceano Yellow	Careaga	4/11/1990	26.10	Manhole	Well Casing	30.52	4.42
32S/13E-31H13	Oceano Yellow	Careaga	10/4/1989	30.40	Manhole	Well Casing	30.52	0.12
32S/13E-31H13	Oceano Yellow	Careaga	10/3/1984	26.60	Manhole	Well Casing	30.52	3.92
32S/13E-31H13	Oceano Yellow	Careaga	5/16/1983	14.30	Manhole	Well Casing	30.52	16.22



## Appendix A: NCMA Sentry Wells Water Level Data



Well	Common Name	Aquifer	Date	Depth to Water (feet)	Surface Completion	RP Description	RP Elev, feet NAVD88	Groundwater Elevation (feet VD88)
12N/36W-36L01	Oceano Dunes Middle	Paso Robles	10/5/2021	21.28	Stove Pipe	Top of Steel	26.77	5.488333333
12N/36W-36L01	Oceano Dunes Middle	Paso Robles	7/13/2021	22.07	Stove Pipe	Top of Steel	26.77	4.698333333
12N/36W-36L01	Oceano Dunes Middle	Paso Robles	4/6/2021	19.74	Stove Pipe	Top of Steel	26.77	7.03
12N/36W-36L01	Oceano Dunes Middle	Paso Robles	1/6/2021	20.04	Stove Pipe	Top of Steel	26.77	6.73
12N/36W-36L01	Oceano Dunes Middle	Paso Robles	10/7/2020	21.30	Stove Pipe	Top of Steel	26.77	5.47
12N/36W-36L01	Oceano Dunes Middle	Paso Robles	4/7/2020	18.35	Stove Pipe	Top of Steel	26.77	8.42
12N/36W-36L01	Oceano Dunes Middle	Paso Robles	1/7/2020	19.02	Stove Pipe	Top of Steel	26.77	7.75
12N/36W-36L01	Oceano Dunes Middle	Paso Robles	10/9/2019	20.85	Stove Pipe	Top of Steel	26.77	5.92
12N/36W-36L01	Oceano Dunes Middle	Paso Robles	7/9/2019	20.39	Stove Pipe	Top of Steel	26.77	6.38
12N/36W-36L01	Oceano Dunes Middle	Paso Robles	4/9/2019	19.93	Stove Pipe	Top of Steel	26.77	6.84
12N/36W-36L01	Oceano Dunes Middle	Paso Robles	1/8/2019	19.00	Stove Pipe	Top of Steel	26.77	7.77
12N/36W-36L01	Oceano Dunes Middle	Paso Robles	10/9/2018	20.80	Stove Pipe	Top of Steel	26.77	5.97
12N/36W-36L01	Oceano Dunes Middle	Paso Robles	7/10/2018	20.74	Stove Pipe	Top of Steel	26.77	6.03
12N/36W-36L01	Oceano Dunes Middle	Paso Robles	4/10/2018	19.11	Stove Pipe	Top of Steel	26.77	7.66
12N/36W-36L01	Oceano Dunes Middle	Paso Robles	1/10/2018	19.32	Stove Pipe	Top of Steel	26.77	7.45
12N/36W-36L01	Oceano Dunes Middle	Paso Robles	10/10/2017	21.23	Stove Pipe	Top of Steel	26.77	5.54
12N/36W-36L01	Oceano Dunes Middle	Paso Robles	7/11/2017	21.59	Stove Pipe	Top of Steel	26.77	5.18
12N/36W-36L01	Oceano Dunes Middle	Paso Robles	4/11/2017	19.38	Stove Pipe	Top of Steel	26.77	7.39
12N/36W-36L01	Oceano Dunes Middle	Paso Robles	1/10/2017	19.70	Stove Pipe	Top of Steel	26.77	7.07
12N/36W-36L01	Oceano Dunes Middle	Paso Robles	10/12/2016	21.86	Stove Pipe	Top of Steel	26.77	4.91
12N/36W-36L01	Oceano Dunes Middle	Paso Robles	7/19/2016	22.21	Stove Pipe	Top of Steel	26.77	4.56
12N/36W-36L01	Oceano Dunes Middle	Paso Robles	4/12/2016	20.56	Stove Pipe	Top of Steel	26.77	6.21
12N/36W-36L01	Oceano Dunes Middle	Paso Robles	1/12/2016	18.76	Stove Pipe	Top of Steel	26.77	8.01
12N/36W-36L01	Oceano Dunes Middle	Paso Robles	10/13/2015	22.14	Stove Pipe	Top of Steel	26.77	4.63
12N/36W-36L01	Oceano Dunes Middle	Paso Robles	7/14/2015	21.84	Stove Pipe	Top of Steel	26.77	4.93
12N/36W-36L01	Oceano Dunes Middle	Paso Robles	4/14/2015	21.18	Stove Pipe	Top of Steel	26.77	5.59
12N/36W-36L01	Oceano Dunes Middle	Paso Robles	1/13/2015	19.89	Stove Pipe	Top of Steel	26.77	6.88
12N/36W-36L01	Oceano Dunes Middle	Paso Robles	10/14/2014	21.75	Stove Pipe	Top of Steel	26.77	5.02
12N/36W-36L01	Oceano Dunes Middle	Paso Robles	7/29/2014	21.57	Stove Pipe	Top of Steel	26.77	5.20
12N/36W-36L01	Oceano Dunes Middle	Paso Robles	6/4/2014	22.36	Stove Pipe	Top of Steel	26.77	4.41
12N/36W-36L01	Oceano Dunes Middle	Paso Robles	4/15/2014	19.89	Stove Pipe	Top of Steel	26.77	6.88
12N/36W-36L01	Oceano Dunes Middle	Paso Robles	1/14/2014	20.38	Stove Pipe	Top of Steel	26.77	6.39
12N/36W-36L01	Oceano Dunes Middle	Paso Robles	10/14/2013	21.71	Stove Pipe	Top of Steel	26.77	5.06

## Appendix A: NCMA Sentry Wells Water Level Data



Well	Common Name	Aquifer	Date	Depth to Water (feet)	Surface Completion	RP Description	RP Elev, feet NAVD88	Groundwater Elevation (feet VD88)
12N/36W-36L01	Oceano Dunes Middle	Paso Robles	7/9/2013	21.37	Stove Pipe	Top of Steel	26.77	5.4
12N/36W-36L01	Oceano Dunes Middle	Paso Robles	4/10/2013	20.10	Stove Pipe	Top of Steel	26.77	6.67
12N/36W-36L01	Oceano Dunes Middle	Paso Robles	1/14/2013	18.62	Stove Pipe	Top of Steel	26.77	8.15
12N/36W-36L01	Oceano Dunes Middle	Paso Robles	10/31/2012	20.11	Stove Pipe	Top of Steel	26.77	6.66
12N/36W-36L01	Oceano Dunes Middle	Paso Robles	7/24/2012	19.42	Stove Pipe	Top of Steel	26.77	7.35
12N/36W-36L01	Oceano Dunes Middle	Paso Robles	4/20/2012	18.26	Stove Pipe	Top of Steel	26.77	8.51
12N/36W-36L01	Oceano Dunes Middle	Paso Robles	4/18/2012	23.83	Stove Pipe	Top of Steel	26.77	2.94
12N/36W-36L01	Oceano Dunes Middle	Paso Robles	1/11/2012	17.68	Stove Pipe	Top of Steel	26.77	9.09
12N/36W-36L01	Oceano Dunes Middle	Paso Robles	11/21/2011	18.08	Stove Pipe	Top of Steel	26.77	8.69
12N/36W-36L01	Oceano Dunes Middle	Paso Robles	7/26/2011	19.63	Stove Pipe	Top of Steel	26.77	7.14
12N/36W-36L01	Oceano Dunes Middle	Paso Robles	4/20/2011	18.26	Stove Pipe	Top of Steel	26.77	8.51
12N/36W-36L01	Oceano Dunes Middle	Paso Robles	1/24/2011	17.61	Stove Pipe	Top of Steel	26.77	9.16
12N/36W-36L01	Oceano Dunes Middle	Paso Robles	10/21/2010	20.75	Stove Pipe	Top of Steel	26.77	6.02
12N/36W-36L01	Oceano Dunes Middle	Paso Robles	7/27/2010	21.18	Stove Pipe	Top of Steel	26.77	5.59
12N/36W-36L01	Oceano Dunes Middle	Paso Robles	4/26/2010	15.94	Flush	Top Flush Mount	23.98	8.04
12N/36W-36L01	Oceano Dunes Middle	Paso Robles	10/21/2009	17.72	Flush	Top Flush Mount	23.98	6.26
12N/36W-36L01	Oceano Dunes Middle	Paso Robles	8/20/2009	19.16	Flush	Top Flush Mount	23.98	4.82
12N/36W-36L01	Oceano Dunes Middle	Paso Robles	5/11/2009	17.68	Flush	Top Flush Mount	23.98	6.30
12N/36W-36L01	Oceano Dunes Middle	Paso Robles	4/18/2009	15.95	Flush	Top Flush Mount	23.98	8.03
12N/36W-36L01	Oceano Dunes Middle	Paso Robles	10/23/2008	18.75	Flush	Top Flush Mount	23.98	5.23
12N/36W-36L01	Oceano Dunes Middle	Paso Robles	4/23/2008	16.87	Flush	Top Flush Mount	23.98	7.11
12N/36W-36L01	Oceano Dunes Middle	Paso Robles	10/18/2007	17.80	Flush	Top Flush Mount	23.98	6.18
12N/36W-36L01	Oceano Dunes Middle	Paso Robles	4/18/2007	16.45	Flush	Top Flush Mount	23.98	7.53
12N/36W-36L01	Oceano Dunes Middle	Paso Robles	10/12/2006	16.44	Flush	Top Flush Mount	23.98	7.54
12N/36W-36L01	Oceano Dunes Middle	Paso Robles	4/20/2006	15.40	Flush	Top Flush Mount	23.98	8.58
12N/36W-36L01	Oceano Dunes Middle	Paso Robles	10/28/2005	16.56	Flush	Top Flush Mount	23.98	7.42
12N/36W-36L01	Oceano Dunes Middle	Paso Robles	4/29/2005	16.60	Flush	Top Flush Mount	23.98	7.38
12N/36W-36L01	Oceano Dunes Middle	Paso Robles	10/15/2004	17.00	Flush	Top Flush Mount	23.98	6.98
12N/36W-36L01	Oceano Dunes Middle	Paso Robles	4/29/2004	15.00	Flush	Top Flush Mount	23.98	8.98
12N/36W-36L01	Oceano Dunes Middle	Paso Robles	10/28/2003	15.43	Flush	Top Flush Mount	23.98	8.55
12N/36W-36L01	Oceano Dunes Middle	Paso Robles	10/17/2002	17.20	Flush	Top Flush Mount	23.98	6.78
12N/36W-36L01	Oceano Dunes Middle	Paso Robles	4/18/2002	17.10	Flush	Top Flush Mount	23.98	6.88
12N/36W-36L01	Oceano Dunes Middle	Paso Robles	10/5/2001	15.70	Flush	Top Flush Mount	23.98	8.28

Appendix A: NCMA Sentry Wells Water Level Data



Well	Common Name	Aquifer	Date	Depth to Water (feet)	Surface Completion	RP Description	RP Elev, feet NAVD88	Groundwater Elevation (feet VD88)
12N/36W-36L01	Oceano Dunes Middle	Paso Robles	4/24/2001	14.60	Flush	Top Flush Mount	23.98	9.38
12N/36W-36L01	Oceano Dunes Middle	Paso Robles	10/13/2000	15.50	Flush	Top Flush Mount	23.98	8.48
12N/36W-36L01	Oceano Dunes Middle	Paso Robles	4/28/2000	15.40	Flush	Top Flush Mount	23.98	8.58
12N/36W-36L01	Oceano Dunes Middle	Paso Robles	10/29/1998	16.32	Flush	Top Flush Mount	23.98	7.66
12N/36W-36L01	Oceano Dunes Middle	Paso Robles	10/26/1996	18.10	Flush	Top Flush Mount	23.98	5.88
12N/36W-36L01	Oceano Dunes Middle	Paso Robles	10/24/1996	17.40	Flush	Top Flush Mount	23.98	6.58
12N/36W-36L01	Oceano Dunes Middle	Paso Robles	4/19/1995	15.45	Flush	Top Flush Mount	23.98	8.53
12N/36W-36L01	Oceano Dunes Middle	Paso Robles	11/11/1994	18.40	Flush	Top Flush Mount	23.98	5.58
12N/36W-36L01	Oceano Dunes Middle	Paso Robles	4/11/1994	16.60	Flush	Top Flush Mount	23.98	7.38
12N/36W-36L01	Oceano Dunes Middle	Paso Robles	10/20/1993	17.55	Flush	Top Flush Mount	23.98	6.43
12N/36W-36L01	Oceano Dunes Middle	Paso Robles	5/3/1993	17.00	Flush	Top Flush Mount	23.98	6.98
12N/36W-36L01	Oceano Dunes Middle	Paso Robles	4/20/1993	16.30	Flush	Top Flush Mount	23.98	7.68
12N/36W-36L01	Oceano Dunes Middle	Paso Robles	11/4/1992	17.95	Flush	Top Flush Mount	23.98	6.03
12N/36W-36L01	Oceano Dunes Middle	Paso Robles	4/30/1992	16.80	Flush	Top Flush Mount	23.98	7.18
12N/36W-36L01	Oceano Dunes Middle	Paso Robles	10/11/1991	17.54	Flush	Top Flush Mount	23.98	6.44
12N/36W-36L01	Oceano Dunes Middle	Paso Robles	4/19/1991	17.78	Flush	Top Flush Mount	23.98	6.20
12N/36W-36L01	Oceano Dunes Middle	Paso Robles	10/11/1990	18.91	Flush	Top Flush Mount	23.98	5.07
12N/36W-36L01	Oceano Dunes Middle	Paso Robles	4/24/1990	17.38	Flush	Top Flush Mount	23.98	6.60
12N/36W-36L01	Oceano Dunes Middle	Paso Robles	10/12/1989	17.69	Flush	Top Flush Mount	23.98	6.29
12N/36W-36L01	Oceano Dunes Middle	Paso Robles	4/20/1989	17.02	Flush	Top Flush Mount	23.98	6.96
12N/36W-36L01	Oceano Dunes Middle	Paso Robles	10/25/1988	17.24	Flush	Top Flush Mount	23.98	6.74
12N/36W-36L01	Oceano Dunes Middle	Paso Robles	4/21/1988	17.42	Flush	Top Flush Mount	23.98	6.56
12N/36W-36L01	Oceano Dunes Middle	Paso Robles	10/19/1987	16.81	Flush	Top Flush Mount	23.98	7.17
12N/36W-36L01	Oceano Dunes Middle	Paso Robles	8/5/1987	18.00	Flush	Top Flush Mount	23.98	5.98
12N/36W-36L01	Oceano Dunes Middle	Paso Robles	4/13/1987	15.39	Flush	Top Flush Mount	23.98	8.59
12N/36W-36L01	Oceano Dunes Middle	Paso Robles	10/31/1986	16.10	Flush	Top Flush Mount	23.98	7.88
12N/36W-36L01	Oceano Dunes Middle	Paso Robles	4/27/1986	16.61	Flush	Top Flush Mount	23.98	7.37
12N/36W-36L01	Oceano Dunes Middle	Paso Robles	4/4/1985	15.90	Flush	Top Flush Mount	23.98	8.08
12N/36W-36L01	Oceano Dunes Middle	Paso Robles	10/24/1984	16.82	Flush	Top Flush Mount	23.98	7.16
12N/36W-36L01	Oceano Dunes Middle	Paso Robles	5/4/1982	14.80	Flush	Top Flush Mount	23.98	9.18
12N/36W-36L01	Oceano Dunes Middle	Paso Robles	10/19/1981	16.78	Flush	Top Flush Mount	23.98	7.20
12N/36W-36L01	Oceano Dunes Middle	Paso Robles	4/21/1981	15.00	Flush	Top Flush Mount	23.98	8.98
12N/36W-36L01	Oceano Dunes Middle	Paso Robles	10/20/1980	17.10	Flush	Top Flush Mount	23.98	6.88

## Appendix A: NCMA Sentry Wells Water Level Data



Well	Common Name	Aquifer	Date	Depth to Water (feet)	Surface Completion	RP Description	RP Elev, feet NAVD88	Groundwater Elevation (feet VD88)
12N/36W-36L01	Oceano Dunes Middle	Paso Robles	10/10/1980	17.10	Flush	Top Flush Mount	23.98	6.88
12N/36W-36L01	Oceano Dunes Middle	Paso Robles	12/11/1979	16.50	Flush	Top Flush Mount	23.98	7.48
12N/36W-36L01	Oceano Dunes Middle	Paso Robles	11/13/1979	16.40	Flush	Top Flush Mount	23.98	7.58
12N/36W-36L01	Oceano Dunes Middle	Paso Robles	4/16/1979	15.25	Flush	Top Flush Mount	23.98	8.73
12N/36W-36L01	Oceano Dunes Middle	Paso Robles	12/4/1978	14.84	Flush	Top Flush Mount	23.98	9.14
12N/36W-36L01	Oceano Dunes Middle	Paso Robles	5/4/1978	15.10	Flush	Top Flush Mount	23.98	8.88
12N/36W-36L01	Oceano Dunes Middle	Paso Robles	11/7/1977	18.05	Flush	Top Flush Mount	23.98	5.93
12N/36W-36L01	Oceano Dunes Middle	Paso Robles	5/17/1977	17.23	Flush	Top Flush Mount	23.98	6.75
12N/36W-36L01	Oceano Dunes Middle	Paso Robles	6/8/1976	19.15	Flush	Top Flush Mount	23.98	4.83
12N/36W-36L01	Oceano Dunes Middle	Paso Robles	1/14/1976	16.83	Flush	Top Flush Mount	23.98	7.15
12N/36W-36L01	Oceano Dunes Middle	Paso Robles	1/8/1976	13.70	Flush	Top Flush Mount	23.98	10.28
12N/36W-36L01	Oceano Dunes Middle	Paso Robles	12/25/1975	16.40	Flush	Top Flush Mount	23.98	7.58
12N/36W-36L01	Oceano Dunes Middle	Paso Robles	12/25/1975	16.20	Flush	Top Flush Mount	23.98	7.78
12N/36W-36L01	Oceano Dunes Middle	Paso Robles	11/25/1975	16.20	Flush	Top Flush Mount	23.98	7.78

## Appendix A: NCMA Sentry Wells Water Level Data



Well	Common Name	Aquifer	Date	Depth to Water (feet)	Surface Completion	RP Description	RP Elev, feet NAVD88	Groundwater Elevation (feet VD88)
12N/36W-36L02	Oceano Dunes Deep	Careaga	10/5/2021	26.43	Stove Pipe	Top of Steel	26.77	0.345
12N/36W-36L02	Oceano Dunes Deep	Careaga	7/13/2021	26.96	Stove Pipe	Top of Steel	26.77	-0.185
12N/36W-36L02	Oceano Dunes Deep	Careaga	4/6/2021	19.68	Stove Pipe	Top of Steel	26.77	7.09
12N/36W-36L02	Oceano Dunes Deep	Careaga	1/6/2021	20.29	Stove Pipe	Top of Steel	26.77	6.48
12N/36W-36L02	Oceano Dunes Deep	Careaga	10/7/2020	25.28	Stove Pipe	Top of Steel	26.77	1.50
12N/36W-36L02	Oceano Dunes Deep	Careaga	4/7/2020	14.90	Stove Pipe	Top of Steel	26.77	11.88
12N/36W-36L02	Oceano Dunes Deep	Careaga	1/7/2020	15.06	Stove Pipe	Top of Steel	26.77	11.71
12N/36W-36L02	Oceano Dunes Deep	Careaga	10/9/2019	24.32	Stove Pipe	Top of Steel	26.77	2.45
12N/36W-36L02	Oceano Dunes Deep	Careaga	7/9/2019	21.30	Stove Pipe	Top of Steel	26.77	5.47
12N/36W-36L02	Oceano Dunes Deep	Careaga	4/9/2019	15.72	Stove Pipe	Top of Steel	26.77	11.05
12N/36W-36L02	Oceano Dunes Deep	Careaga	1/8/2019	17.45	Stove Pipe	Top of Steel	26.77	9.32
12N/36W-36L02	Oceano Dunes Deep	Careaga	10/9/2018	25.10	Stove Pipe	Top of Steel	26.77	1.67
12N/36W-36L02	Oceano Dunes Deep	Careaga	7/10/2018	24.11	Stove Pipe	Top of Steel	26.77	2.66
12N/36W-36L02	Oceano Dunes Deep	Careaga	4/10/2018	16.02	Stove Pipe	Top of Steel	26.77	10.75
12N/36W-36L02	Oceano Dunes Deep	Careaga	1/10/2018	19.11	Stove Pipe	Top of Steel	26.77	7.66
12N/36W-36L02	Oceano Dunes Deep	Careaga	10/10/2017	24.70	Stove Pipe	Top of Steel	26.77	2.07
12N/36W-36L02	Oceano Dunes Deep	Careaga	7/11/2017	23.65	Stove Pipe	Top of Steel	26.77	3.12
12N/36W-36L02	Oceano Dunes Deep	Careaga	4/10/2017	15.00	Stove Pipe	Top of Steel	26.77	11.77
12N/36W-36L02	Oceano Dunes Deep	Careaga	1/10/2017	16.15	Stove Pipe	Top of Steel	26.77	10.62
12N/36W-36L02	Oceano Dunes Deep	Careaga	10/12/2016	27.86	Stove Pipe	Top of Steel	26.77	-1.09
12N/36W-36L02	Oceano Dunes Deep	Careaga	7/19/2016	25.76	Stove Pipe	Top of Steel	26.77	1.01
12N/36W-36L02	Oceano Dunes Deep	Careaga	4/12/2016	18.43	Stove Pipe	Top of Steel	26.77	8.34
12N/36W-36L02	Oceano Dunes Deep	Careaga	1/12/2016	16.27	Stove Pipe	Top of Steel	26.77	10.50
12N/36W-36L02	Oceano Dunes Deep	Careaga	10/13/2015	27.17	Stove Pipe	Top of Steel	26.77	-0.40
12N/36W-36L02	Oceano Dunes Deep	Careaga	7/14/2015	26.11	Stove Pipe	Top of Steel	26.77	0.66
12N/36W-36L02	Oceano Dunes Deep	Careaga	4/14/2015	22.24	Stove Pipe	Top of Steel	26.77	4.53
12N/36W-36L02	Oceano Dunes Deep	Careaga	1/13/2015	16.91	Stove Pipe	Top of Steel	26.77	9.86
12N/36W-36L02	Oceano Dunes Deep	Careaga	10/14/2014	26.30	Stove Pipe	Top of Steel	26.77	0.47
12N/36W-36L02	Oceano Dunes Deep	Careaga	7/29/2014	25.64	Stove Pipe	Top of Steel	26.77	1.13
12N/36W-36L02	Oceano Dunes Deep	Careaga	6/4/2014	25.22	Stove Pipe	Top of Steel	26.77	1.55
12N/36W-36L02	Oceano Dunes Deep	Careaga	4/15/2014	16.94	Stove Pipe	Top of Steel	26.77	9.83
12N/36W-36L02	Oceano Dunes Deep	Careaga	1/14/2014	18.76	Stove Pipe	Top of Steel	26.77	8.01
12N/36W-36L02	Oceano Dunes Deep	Careaga	10/14/2013	23.94	Stove Pipe	Top of Steel	26.77	2.83

## Appendix A: NCMA Sentry Wells Water Level Data



Well	Common Name	Aquifer	Date	Depth to Water (feet)	Surface Completion	RP Description	RP Elev, feet NAVD88	Groundwater Elevation (feet VD88)
12N/36W-36L02	Oceano Dunes Deep	Careaga	7/9/2013	23.15	Stove Pipe	Top of Steel	26.77	3.62
12N/36W-36L02	Oceano Dunes Deep	Careaga	4/10/2013	15.35	Stove Pipe	Top of Steel	26.77	11.42
12N/36W-36L02	Oceano Dunes Deep	Careaga	1/14/2013	11.24	Stove Pipe	Top of Steel	26.77	15.53
12N/36W-36L02	Oceano Dunes Deep	Careaga	10/31/2012	18.81	Stove Pipe	Top of Steel	26.77	7.96
12N/36W-36L02	Oceano Dunes Deep	Careaga	7/24/2012	19.05	Stove Pipe	Top of Steel	26.77	7.72
12N/36W-36L02	Oceano Dunes Deep	Careaga	4/18/2012	10.81	Stove Pipe	Top of Steel	26.77	15.96
12N/36W-36L02	Oceano Dunes Deep	Careaga	1/11/2012	11.18	Stove Pipe	Top of Steel	26.77	15.59
12N/36W-36L02	Oceano Dunes Deep	Careaga	11/21/2011	13.99	Stove Pipe	Top of Steel	26.77	12.78
12N/36W-36L02	Oceano Dunes Deep	Careaga	7/26/2011	18.03	Stove Pipe	Top of Steel	26.77	8.74
12N/36W-36L02	Oceano Dunes Deep	Careaga	1/24/2011	9.37	Stove Pipe	Top of Steel	26.77	17.40
12N/36W-36L02	Oceano Dunes Deep	Careaga	10/21/2010	19.77	Stove Pipe	Top of Steel	26.77	7.00
12N/36W-36L02	Oceano Dunes Deep	Careaga	7/27/2010	20.53	Stove Pipe	Top of Steel	26.77	6.24
12N/36W-36L02	Oceano Dunes Deep	Careaga	4/26/2010	9.24	Flush	Top Flush Mount	23.98	14.74
12N/36W-36L02	Oceano Dunes Deep	Careaga	10/21/2009	17.65	Flush	Top Flush Mount	23.98	6.33
12N/36W-36L02	Oceano Dunes Deep	Careaga	8/20/2009	19.15	Flush	Top Flush Mount	23.98	4.83
12N/36W-36L02	Oceano Dunes Deep	Careaga	5/11/2009	14.38	Flush	Top Flush Mount	23.98	9.60
12N/36W-36L02	Oceano Dunes Deep	Careaga	10/23/2008	18.73	Flush	Top Flush Mount	23.98	5.25
12N/36W-36L02	Oceano Dunes Deep	Careaga	4/23/2008	11.55	Flush	Top Flush Mount	23.98	12.43
12N/36W-36L02	Oceano Dunes Deep	Careaga	10/18/2007	17.70	Flush	Top Flush Mount	23.98	6.28
12N/36W-36L02	Oceano Dunes Deep	Careaga	4/18/2007	10.30	Flush	Top Flush Mount	23.98	13.68
12N/36W-36L02	Oceano Dunes Deep	Careaga	10/12/2006	14.36	Flush	Top Flush Mount	23.98	9.62
12N/36W-36L02	Oceano Dunes Deep	Careaga	4/20/2006	3.41	Flush	Top Flush Mount	23.98	20.57
12N/36W-36L02	Oceano Dunes Deep	Careaga	10/28/2005	14.10	Flush	Top Flush Mount	23.98	9.88
12N/36W-36L02	Oceano Dunes Deep	Careaga	4/29/2005	6.50	Flush	Top Flush Mount	23.98	17.48
12N/36W-36L02	Oceano Dunes Deep	Careaga	10/15/2004	16.57	Flush	Top Flush Mount	23.98	7.41
12N/36W-36L02	Oceano Dunes Deep	Careaga	4/29/2004	3.80	Flush	Top Flush Mount	23.98	20.18
12N/36W-36L02	Oceano Dunes Deep	Careaga	10/28/2003	11.73	Flush	Top Flush Mount	23.98	12.25
12N/36W-36L02	Oceano Dunes Deep	Careaga	10/17/2002	12.00	Flush	Top Flush Mount	23.98	11.98
12N/36W-36L02	Oceano Dunes Deep	Careaga	4/18/2002	5.80	Flush	Top Flush Mount	23.98	18.18
12N/36W-36L02	Oceano Dunes Deep	Careaga	10/5/2001	9.80	Flush	Top Flush Mount	23.98	14.18
12N/36W-36L02	Oceano Dunes Deep	Careaga	4/24/2001	1.80	Flush	Top Flush Mount	23.98	22.18
12N/36W-36L02	Oceano Dunes Deep	Careaga	10/13/2000	9.00	Flush	Top Flush Mount	23.98	14.98
12N/36W-36L02	Oceano Dunes Deep	Careaga	4/28/2000	3.40	Flush	Top Flush Mount	23.98	20.58



## Appendix A: NCMA Sentry Wells Water Level Data



Well	Common Name	Aquifer	Date	Depth to Water (feet)	Surface Completion	RP Description	RP Elev, feet NAVD88	Groundwater Elevation (feet VD88)
12N/36W-36L02	Oceano Dunes Deep	Careaga	4/23/1999	10.80	Flush	Top Flush Mount	23.98	13.18
12N/36W-36L02	Oceano Dunes Deep	Careaga	10/29/1998	10.19	Flush	Top Flush Mount	23.98	13.79
12N/36W-36L02	Oceano Dunes Deep	Careaga	10/24/1996	13.80	Flush	Top Flush Mount	23.98	10.18
12N/36W-36L02	Oceano Dunes Deep	Careaga	10/26/1995	14.50	Flush	Top Flush Mount	23.98	9.48
12N/36W-36L02	Oceano Dunes Deep	Careaga	4/19/1995	6.25	Flush	Top Flush Mount	23.98	17.73
12N/36W-36L02	Oceano Dunes Deep	Careaga	11/11/1994	15.50	Flush	Top Flush Mount	23.98	8.48
12N/36W-36L02	Oceano Dunes Deep	Careaga	4/11/1994	9.38	Flush	Top Flush Mount	23.98	14.60
12N/36W-36L02	Oceano Dunes Deep	Careaga	10/20/1993	16.10	Flush	Top Flush Mount	23.98	7.88
12N/36W-36L02	Oceano Dunes Deep	Careaga	5/3/1993	11.60	Flush	Top Flush Mount	23.98	12.38
12N/36W-36L02	Oceano Dunes Deep	Careaga	4/20/1993	9.50	Flush	Top Flush Mount	23.98	14.48
12N/36W-36L02	Oceano Dunes Deep	Careaga	11/4/1992	16.90	Flush	Top Flush Mount	23.98	7.08
12N/36W-36L02	Oceano Dunes Deep	Careaga	4/30/1992	11.50	Flush	Top Flush Mount	23.98	12.48
12N/36W-36L02	Oceano Dunes Deep	Careaga	10/11/1991	16.80	Flush	Top Flush Mount	23.98	7.18
12N/36W-36L02	Oceano Dunes Deep	Careaga	4/16/1991	10.83	Flush	Top Flush Mount	23.98	13.15
12N/36W-36L02	Oceano Dunes Deep	Careaga	10/11/1990	17.05	Flush	Top Flush Mount	23.98	6.93
12N/36W-36L02	Oceano Dunes Deep	Careaga	4/24/1990	11.39	Flush	Top Flush Mount	23.98	12.59
12N/36W-36L02	Oceano Dunes Deep	Careaga	10/12/1989	13.54	Flush	Top Flush Mount	23.98	10.44
12N/36W-36L02	Oceano Dunes Deep	Careaga	4/20/1989	8.90	Flush	Top Flush Mount	23.98	15.08
12N/36W-36L02	Oceano Dunes Deep	Careaga	10/25/1988	12.98	Flush	Top Flush Mount	23.98	11.00
12N/36W-36L02	Oceano Dunes Deep	Careaga	4/21/1988	8.40	Flush	Top Flush Mount	23.98	15.58
12N/36W-36L02	Oceano Dunes Deep	Careaga	10/19/1987	11.40	Flush	Top Flush Mount	23.98	12.58
12N/36W-36L02	Oceano Dunes Deep	Careaga	8/5/1987	11.40	Flush	Top Flush Mount	23.98	12.58
12N/36W-36L02	Oceano Dunes Deep	Careaga	4/13/1987	3.24	Flush	Top Flush Mount	23.98	20.74
12N/36W-36L02	Oceano Dunes Deep	Careaga	10/31/1986	7.51	Flush	Top Flush Mount	23.98	16.47
12N/36W-36L02	Oceano Dunes Deep	Careaga	4/27/1986	3.56	Flush	Top Flush Mount	23.98	20.42
12N/36W-36L02	Oceano Dunes Deep	Careaga	4/4/1985	4.10	Flush	Top Flush Mount	23.98	19.88
12N/36W-36L02	Oceano Dunes Deep	Careaga	10/24/1984	8.32	Flush	Top Flush Mount	23.98	15.66
12N/36W-36L02	Oceano Dunes Deep	Careaga	5/4/1982	3.12	Flush	Top Flush Mount	23.98	20.86
12N/36W-36L02	Oceano Dunes Deep	Careaga	10/19/1981	11.75	Flush	Top Flush Mount	23.98	12.23
12N/36W-36L02	Oceano Dunes Deep	Careaga	4/21/1981	4.14	Flush	Top Flush Mount	23.98	19.84
12N/36W-36L02	Oceano Dunes Deep	Careaga	10/20/1980	10.40	Flush	Top Flush Mount	23.98	13.58
12N/36W-36L02	Oceano Dunes Deep	Careaga	12/11/1979	9.30	Flush	Top Flush Mount	23.98	14.68
12N/36W-36L02	Oceano Dunes Deep	Careaga	11/13/1979	10.00	Flush	Top Flush Mount	23.98	13.98
12N/36W-36L02	Oceano Dunes Deep	Careaga	4/16/1979	5.46	Flush	Top Flush Mount	23.98	18.52

## Appendix A: NCMA Sentry Wells Water Level Data



Well	Common Name	Aquifer	Date	Depth to Water (feet)	Surface Completion	RP Description	RP Elev, feet NAVD88	Groundwater Elevation (feet VD88)
12N/36W-36L02	Oceano Dunes Deep	Careaga	12/4/1978	9.90	Flush	Top Flush Mount	23.98	14.08
12N/36W-36L02	Oceano Dunes Deep	Careaga	5/4/1978	6.84	Flush	Top Flush Mount	23.98	17.14
12N/36W-36L02	Oceano Dunes Deep	Careaga	11/7/1977	16.20	Flush	Top Flush Mount	23.98	7.78
12N/36W-36L02	Oceano Dunes Deep	Careaga	5/17/1977	13.31	Flush	Top Flush Mount	23.98	10.67
12N/36W-36L02	Oceano Dunes Deep	Careaga	6/8/1976	12.75	Flush	Top Flush Mount	23.98	11.23
12N/36W-36L02	Oceano Dunes Deep	Careaga	1/14/1976	7.03	Flush	Top Flush Mount	23.98	16.95
12N/36W-36L02	Oceano Dunes Deep	Careaga	1/8/1976	6.50	Flush	Top Flush Mount	23.98	17.48
12N/36W-36L02	Oceano Dunes Deep	Careaga	11/25/1975	7.50	Flush	Top Flush Mount	23.98	16.48

## Appendix A: NCMA Sentry Wells Water Level Data



Well	Common Name	Aquifer	Date	Depth to Water (feet)	Surface Completion	RP Description	RP Elev, feet NAVD88	Groundwater Elevation (feet VD88)
12N/35W-32C03	County MW-3	Paso Robles	10/5/2021	46.24	Flush	Top Flush Mount	47.70	1.46
12N/35W-32C03	County MW-3	Paso Robles	7/13/2021	44.75	Flush	Top Flush Mount	47.70	2.95
12N/35W-32C03	County MW-3	Paso Robles	4/6/2021	38.84	Flush	Top Flush Mount	47.70	8.86
12N/35W-32C03	County MW-3	Paso Robles	1/6/2021	39.92	Flush	Top Flush Mount	47.70	7.78
12N/35W-32C03	County MW-3	Paso Robles	10/7/2020	43.03	Flush	Top Flush Mount	47.70	4.67
12N/35W-32C03	County MW-3	Paso Robles	7/6/2020	41.31	Flush	Top Flush Mount	47.70	6.39
12N/35W-32C03	County MW-3	Paso Robles	4/7/2020	31.48	Flush	Top Flush Mount	47.70	16.22
12N/35W-32C03	County MW-3	Paso Robles	1/7/2020	35.29	Flush	Top Flush Mount	47.70	12.41
12N/35W-32C03	County MW-3	Paso Robles	10/9/2019	42.42	Flush	Top Flush Mount	47.70	5.28
12N/35W-32C03	County MW-3	Paso Robles	7/9/2019	37.20	Flush	Top Flush Mount	47.70	10.50
12N/35W-32C03	County MW-3	Paso Robles	4/9/2019	32.50	Flush	Top Flush Mount	47.70	15.20
12N/35W-32C03	County MW-3	Paso Robles	1/8/2019	35.45	Flush	Top Flush Mount	47.70	12.25
12N/35W-32C03	County MW-3	Paso Robles	10/9/2018	43.85	Flush	Top Flush Mount	47.70	3.85
12N/35W-32C03	County MW-3	Paso Robles	7/10/2018	40.00	Flush	Top Flush Mount	47.70	7.70
12N/35W-32C03	County MW-3	Paso Robles	4/10/2018	32.80	Flush	Top Flush Mount	47.70	14.90
12N/35W-32C03	County MW-3	Paso Robles	1/10/2018	35.10	Flush	Top Flush Mount	47.70	12.60
12N/35W-32C03	County MW-3	Paso Robles	10/10/2017	42.05	Flush	Top Flush Mount	47.70	5.65
12N/35W-32C03	County MW-3	Paso Robles	7/11/2017	38.34	Flush	Top Flush Mount	47.70	9.36
12N/35W-32C03	County MW-3	Paso Robles	4/11/2017	28.44	Flush	Top Flush Mount	47.70	19.26
12N/35W-32C03	County MW-3	Paso Robles	1/10/2017	34.85	Flush	Top Flush Mount	47.70	12.85
12N/35W-32C03	County MW-3	Paso Robles	10/12/2016	47.49	Flush	Top Flush Mount	47.70	0.21
12N/35W-32C03	County MW-3	Paso Robles	7/19/2016	44.51	Flush	Top Flush Mount	47.70	3.19
12N/35W-32C03	County MW-3	Paso Robles	4/12/2016	36.41	Flush	Top Flush Mount	47.70	11.29
12N/35W-32C03	County MW-3	Paso Robles	1/12/2016	36.48	Flush	Top Flush Mount	47.70	11.22
12N/35W-32C03	County MW-3	Paso Robles	10/13/2015	51.21	Flush	Top Flush Mount	47.70	-3.51
12N/35W-32C03	County MW-3	Paso Robles	7/14/2015	49.07	Flush	Top Flush Mount	47.70	-1.37
12N/35W-32C03	County MW-3	Paso Robles	4/14/2015	44.00	Flush	Top Flush Mount	47.70	3.70
12N/35W-32C03	County MW-3	Paso Robles	1/13/2015	38.90	Flush	Top Flush Mount	47.70	8.80
12N/35W-32C03	County MW-3	Paso Robles	10/14/2014	50.50	Flush	Top Flush Mount	47.70	-2.80
12N/35W-32C03	County MW-3	Paso Robles	7/29/2014	44.02	Flush	Top Flush Mount	47.70	3.68
12N/35W-32C03	County MW-3	Paso Robles	6/4/2014	45.46	Flush	Top Flush Mount	47.70	2.24
12N/35W-32C03	County MW-3	Paso Robles	4/15/2014	41.51	Flush	Top Flush Mount	47.70	6.19
12N/35W-32C03	County MW-3	Paso Robles	1/14/2014	41.00	Flush	Top Flush Mount	47.70	6.70
12N/35W-32C03	County MW-3	Paso Robles	10/14/2013	45.26	Flush	Top Flush Mount	47.70	2.44

## Appendix A: NCMA Sentry Wells Water Level Data



Well	Common Name	Aquifer	Date	Depth to Water (feet)	Surface Completion	RP Description	RP Elev, feet NAVD88	Groundwater Elevation (feet VD88)
12N/35W-32C03	County MW-3	Paso Robles	7/9/2013	43.83	Flush	Top Flush Mount	47.70	3.87
12N/35W-32C03	County MW-3	Paso Robles	4/10/2013	37.89	Flush	Top Flush Mount	47.70	9.81
12N/35W-32C03	County MW-3	Paso Robles	1/14/2013	32.26	Flush	Top Flush Mount	47.70	15.44
12N/35W-32C03	County MW-3	Paso Robles	10/30/2012	40.05	Flush	Top Flush Mount	47.70	7.65
12N/35W-32C03	County MW-3	Paso Robles	7/25/2012	38.62	Flush	Top Flush Mount	47.70	9.08
12N/35W-32C03	County MW-3	Paso Robles	4/19/2012	23.02	Flush	Top Flush Mount	47.70	24.68

Appendix A: NCMA Sentry Wells Water Quality Data



Well	Date	TDS mg/l	Chloride mg/l	Sodium mg/l	Potassium mg/l	Calcium mg/l	Magnesium mg/l	Bicarbonate as CaCO3 mg/l	Sulfate mg/l	Nitrate (as N) mg/l	Total Kjeldahl Nitrogen mg/l	Boron mg/l	Fluoride mg/l	Iodide mg/l	Manganese mg/l	Bromide mg/l	Total Alkalinity as CaCO3 mg/l	Carbonate as CaCO3 mg/l	Hydroxide as CaCO3 mg/l	Specific Conductivity umhos/cm	Iron mg/l
32S/12E-24B01	10/6/2021	2,900	1400	580	33	200	200	410	190	0.5	1.9	0.14	0.25	0.083	1.4	4.6	410	8.2	8.2	4,960	4
32S/12E-24B01	4/7/2021	2,800	1300	470	25	170	180	410	170	0.12	2	0.12	0.13	0.096	1.3	4.2	410	8.2	8.2	4,930	2.4
32S/12E-24B01	10/12/2020	3,100	1,400	520	28.0	180.0	180	420	210	0	2.00	0.12	0.300	0.110	1.30	3.80	420	0	0	4,840	2.0
32S/12E-24B01	4/22/2020	2,800	1,300	510	27.0	170.0	170	400	190	0	2.10	0.13	0.000	0.120	1.30	3.90	400	0	0	4,930	3.2
32S/12E-24B01	10/14/2019	3,100	1,300	540	29.0	180.0	180	410	180	0	1.90	0.15	0.150	0.012	1.30	3.70	410	0	0	4,900	2.7
32S/12E-24B01	4/10/2019	2,800	1,400	520	35	180	190	430	200	ND	2	0.15	ND	0.11	1.4	4.0	430	ND	ND	5,260	2.1
32S/12E-24B01	10/9/2018	2,800	1,400	600	35	180	190	410	190	ND	2	0.15	ND	0.11	1.4	2.8	410	ND	ND	5,040	22
32S/12E-24B01	4/11/2018	3,000	1,400	560	33	170	180	430	200	0.25	2.0	0.15	ND	0.11	1.4	5.1	430	ND	ND	5,150	2.2
32S/12E-24B01	10/11/2017	3,100	1,400	590	36	180	190	430	190	ND	2.3	0.17	0.13	0.11	1.4	0.64	430	ND	ND	5,180	1.7
32S/12E-24B01	4/11/2017	3,400	1,400	680	41	190	210	420	190	ND	2.4	0.16	0.17	0.11	1.6	4.7	420	ND	ND	5,020	1.8
32S/12E-24B01	10/11/2016	3,100	1,400	700	44	210	220	450	190	0.26	2.1	0.18	ND	0.12	1.6	4.1	450	ND	ND	5,020	1.3
32S/12E-24B01	4/12/2016	2,800	1,400	640	37	170	180	420	190	<0.48	2.2	0.16	<0.055	0.081	1.3	4.8	420	<8.2	<8.2	5,000	0.73
32S/12E-24B01	10/15/2015	3,230	230	560	34	160	170	413	42	<0.05	2.2	0.14	<0.10	0.091	1.1	0.68	413	<10	<10	4,880	0.54
32S/12E-24B01	4/15/2015	3,010	1,300	510	30	150	160	410	220	<0.05	2.9	0.15	<0.5	0.023	1.0	3.4	410	<10	<10	4,760	0.72
32S/12E-24B01	1/14/2015	2,980	1,300	520	30	150	170	400	210	<0.25	2.2	0.14	<0.5	<0.021	1.0	2.9	400	<10	<10	4,640	0.52
32S/12E-24B01	10/14/2014	3,160	1,100	530	32	150	170	390	180	0.32	2.2	0.16	<0.5	<0.01	1.1	<0.5	390	<10	<10	4,780	0.67
32S/12E-24B01	7/30/2014	2,950	1,300	520	29	140	170	440	190	<0.25	1.9	0.11	<0.5	0.03	1.1	2.6	440	<10	<10	4,830	0.62
32S/12E-24B01	4/16/2014	2,880	1,200	560	29	140	140	390	190	<0.05	2.2	0.130	<0.5	0.03	0.92	2.9	390	<10	<10	4,790	0.72
32S/12E-24B01	1/15/2014	2,870	1,300	540	30	140	160	380	214	<0.25	2.4	0.17	<0.5	<0.01	1.0	3.0	380	<10	<10	4,800	0.71
32S/12E-24B01	10/15/2013	2,860	1,200	560	31	150	160	380	200	<0.25	2.2	0.13	<0.5	<0.01	1.0	3.0	380	<10	<10	4,810	0.75
32S/12E-24B01	7/9/2013	2,960	1,300	560	32	150	160	395	215	<0.25	2.4	0.16	<0.5	<0.01	1.1	2.0	395	<10	<10	4,850	0.81
32S/12E-24B01	4/10/2013	2,920	1,300	540	30	140	150	410	220	<0.25	1.9	0.16	<0.1	<0.01	1.00	3.5	410	<10	<10	4,830	0.67
32S/12E-24B01	1/14/2013	2,630	1,300	540	30	140	140	410	220	<0.05	2.7	0.15	<0.1	<0.01	0.96	2.8	410	<10	<10	4,790	0.72
32S/12E-24B01	10/29/2012	2,950	1,200	590	34	150	160	360	200	<0.25	2.4	0.18	<0.5	<0.01	1.1	11	360	<10	<10	4,750	0.78
32S/12E-24B01	7/23/2012	3,010	1,400	530	30	120	130	397	210	<0.05	2.1	0.15	<0.1	0.041	0.86	3	397	<10	<10	4,720	1.4
32S/12E-24B01	4/18/2012	3,000	1,500	450	27	120	120	400	230	<0.1	2	0.13	0.13	<0.01	0.89	3.12	400	<10	<10	4,660	0.6
32S/12E-24B01	1/11/2012	2,750	1,200	520	30	140	140	400	170	<0.1	4	0.18	0.1	0.033	0.94	3.2	400	<10	<10	4,560	0.55
32S/12E-24B01	11/21/2011	2,740	1,200	410	25	130	120	380	200	<0.3	2.3	0.13	<0.6	0.053	0.9	2.73	380	<10	<10	4,470	0.7
32S/12E-24B01	7/25/2011	3,690	1,200	530	33	140	150	380	200.2	<0.05	1.8	0.14	<0.1	0.053	0.91	3.281	380	<5	<5	4,900	0.73
32S/12E-24B01	4/20/2011	2,810	1,214	500	27	140	130	400	216	<0.05	1.7	0.24	0.18	0.067	0.95	3.3	400	<2.0	<2.0	4,430	NA
32S/12E-24B01	1/24/2011	2,380	1,100	370	24	110	120	380	180	<0.15	1.8	0.16	<0.3	0.63	0.68	2.8	380	<2.0	<2.0	4,020	0.89
32S/12E-24B01	10/28/2010	2,330	960	390	25	140	140	350	160	<0.1	3.9	0.15	<0.1	NA	0.75	2.6	350	<10	<10	3,860	1.3
32S/12E-24B01	7/27/2010	616	43	52.5	6.21	115	44.7	341	160	< 0.10	2.9	0.063	< 0.10	0.11	0.274	0.18	341	< 1.0	< 1.0	1,000	9.34
32S/12E-24B01	4/27/2010	676	47	54.7	4.60	107	43.6	327	140	< 0.10	0.98	0.0714	< 0.10	< 0.10	0.0458	0.18	327	< 1.0	< 1.0	990	4.06
32S/12E-24B01	1/27/2010	694	55	56.2	6.80	123	43.2	340	150	0.40	1.7	0.12	< 0.10	0.33	0.875	0.19	340	< 1.0	< 1.0	1,000	16.6
32S/12E-24B01	10/19/2009	766	140	121	16.7	111	52.4	303	150	0.25	2.8	0.0959	0.11	< 0.10	0.208	0.47	303	< 1.0	< 1.0	1,200	7.79
32S/12E-24B01	8/20/2009	705	94	86.8	11.7	116	35.6	286	150	0.21	2.7	NA	< 0.10	0.12	0.248	0.38	286	< 1.0	< 1.0	1,000	7.15
32S/12E-24B01	5/12/2009	695	100	82.1	13.2	108	45	288	150	NA	NA	NA	0.11	NA	0.66	0.29	288	< 1.0	< 1.0	1,100	23.9
32S/12E-24B01	3/26/1996	1,870	773	380	24.0	125	95	427	154	0.0452	NA	0.27	NA	NA	NA	NA	NA	NA	NA	NA	NA
32S/12E-24B01	6/9/1976	1,706	667	400	16.2	94	95	474	159	0.0904	NA	0.12	0.5	NA	NA	NA	NA	NA	NA	NA	NA
32S/12E-24B01	1/17/1966	1,700	652	406	20.0	95	83	440	175	1	NA	0.07	0.3	NA	NA	NA	NA	NA	NA	NA	NA

Appendix A: NCMA Sentry Wells Water Quality Data



Well	Date	TDS mg/l	Chloride mg/l	Sodium mg/l	Potassium mg/l	Calcium mg/l	Magnesium mg/l	Bicarbonate as CaCO3 mg/l	Sulfate mg/l	Nitrate (as N) mg/l	Total Kjeldahl Nitrogen mg/l	Boron mg/l	Fluoride mg/l	Iodide mg/l	Manganese mg/l	Bromide mg/l	Total Alkalinity as CaCO3 mg/l	Carbonate as CaCO3 mg/l	Hydroxide as CaCO3 mg/l	Specific Conductivity umhos/cm	Iron mg/l
32S/12E-24B02	10/6/2021	630	32	44	3.3	110	32	280	160	0.1	0.22	0.1	0.048	0.012	0.17	0.12	280	4.1	4.1	929	0.5
32S/12E-24B02	7/15/2021	560	30	44	3.3	110	34	320	160	0.024	0.4	0.042	0.043	0.014	0.17	0.096	320	4.1	4.1	949	0.47
32S/12E-24B02	4/7/2021	630	29	42	3.2	100	35	320	160	0.024	0.24	0.064	0.062	0.0099	0.16	0.11	320	4.1	4.1		0.45
32S/12E-24B02	1/7/2021	590	30	45	3.3	110	36	320	170	0.024	0.63	0.073	0.064	0.014	0.17	0.082	320	4.1	4.1	922	0.54
32S/12E-24B02	10/12/2020	700	31	46	3.6	120.0	36	320	160	0	0.21	0.07	0.054	0.014	0.18	0.10	320	0	0	936	0.5
32S/12E-24B02	7/7/2020	690	31	48	3.6	120.0	35	300	170	0	0.23	0.07	0.047	0.014	0.18	0.08	300	4	4	945	0.5
32S/12E-24B02	4/22/2020	560	31	41	3.4	100.0	32	330	160	0	0.28	0.06	0.026	0.014	0.16	0.00	330	0	0	960	0.5
32S/12E-24B02	1/15/2020	660	31	47	4.0	120.0	37	320	160	0	0.23	0.08	0.055	0.017	0.18	0.14	320	0	0	900	0.6
32S/12E-24B02	10/14/2019	700	30	45	3.7	110.0	35	310	160	0	0.10	0.08	0.046	0.110	0.18	0.00	310	0	0	931	0.6
32S/12E-24B02	7/10/2019	550	30	48	4.2	120.0	37	320	160	0	0.34	0.07	0.037	0.015	0.18	0.00	320	0	0	931	0.6
32S/12E-24B02	4/10/2019	620	31	42	3.6	110	35	320	160	ND	0.31	0.070	0.059	ND	0.17	0.130	320	ND	ND	941	0.59
32S/12E-24B02	1/8/2019	630	30	43	3.6	110	35	310	160	ND	0.27	0.072	0.056	0.013	0.17	0.096	310	ND	ND	938	0.59
32S/12E-24B02	10/9/2018	640	30	48	3.8	120	37	320	160	ND	0.34	0.068	0.025	0.013	0.18	0.06	320	ND	ND	952	0.62
32S/12E-24B02	7/12/2018	620	29	46	3.7	120	36	320	150	ND	0.30	0.072	0.042	0.013	0.17	0.11	320	ND	ND	962	0.69
32S/12E-24B02	4/11/2018	660	31	45	3.5	110	35	320	160	0.034	0.28	0.069	0.050	0.011	0.17	0.10	320	ND	ND	942	0.58
32S/12E-24B02	1/12/2018	570	30	53	3.8	120	38	320	160	ND	0.32	0.071	0.068	0.015	0.18	0.11	320	ND	ND	930	0.56
32S/12E-24B02	10/11/2017	670	31	45	3.7	120	38	330	160	ND	0.41	0.077	0.045	0.014	0.18	0.1	330	ND	ND	962	0.74
32S/12E-24B02	7/12/2017	760	31	48	4	130	39	310	160	ND	0.18	0.072	0.04	0.015	0.2	0.12	310	ND	ND	948	0.93
32S/12E-24B02	4/11/2017	630	34	46	3.7	120	35	310	170	ND	0.31	0.062	0.09	0.017	0.17	0.12	310	ND	ND	933	0.59
32S/12E-24B02	1/12/2017	660	34	47	3.7	120	36	320	170	ND	0.26	0.069	0.031	0.023	0.2	0.097	320	ND	ND	938	0.79
32S/12E-24B02	10/11/2016	660	35	48	4	120	39	320	170	ND	0.26	0.069	0.038	0.023	0.18	0.12	320	ND	ND	953	0.75
32S/12E-24B02	7/19/2016	660	36	50	3.9	120	38	320	160	<0.022	0.15	0.07	0.036	0.016	0.17	0.15	320	<4.1	<4.1	947	0.67
32S/12E-24B02	4/12/2016	640	35	48	3.8	110	37	300	160	<0.022	0.38	0.064	0.045	0.011	0.17	0.13	300	<4.1	<4.1	939	0.53
32S/12E-24B02	1/12/2016	570	38	48	3.8	110	36	290	170	<0.022	0.27	0.044	0.11	0.015	0.16	0.15	290	<4.1	<4.1	951	0.48
32S/12E-24B02	10/15/2015	650	34	41	3.8	100	33	306	160	<0.05	<1	0.054	<0.10	0.014	0.18	<0.10	306	<10	<10	950	0.72
32S/12E-24B02	7/15/2015	650	35	50	3.0	120	36	295	160	<0.05	<1	0.069	<0.1	0.01	0.16	<0.1	295	<10	<10	950	0.69
32S/12E-24B02	4/15/2015	620	35	40	3.4	100	31	300	170	<0.05	<1	0.066	<0.1	0.01	0.14	<0.1	300	<10	<10	900	0.45
32S/12E-24B02	1/14/2015	640	36	41	3.3	110	32	290	170	<0.05	<1	0.062	<0.1	<0.01	0.14	<0.1	290	<10	<10	900	0.48
32S/12E-24B02	10/14/2014	630	30	41	3.9	100	32	290	140	<0.05	<1	0.065	<0.1	<0.01	0.15	<0.1	290	<10	<10	940	0.44
32S/12E-24B02	7/29/2014	620	33	42	3.5	100	33	300	150	<0.05	<1	<0.1	<0.1	<0.01	0.14	<0.1	300	<10	<10	940	0.37
32S/12E-24B02	4/16/2014	630	32	43	4.3	88	28	300	150	<0.05	<1	0.067	<0.1	<0.01	0.12	<0.1	300	<10	<10	940	0.32
32S/12E-24B02	1/15/2014	630	33	46	3.9	100	34	290	165	<0.05	<1	<0.05	<0.1	<0.01	0.14	<0.1	290	<10	<10	940	0.37
32S/12E-24B02	10/15/2013	630	30	44	3.8	98	32	290	170	<0.05	<1	<0.05	<0.1	<0.01	0.13	<0.1	290	<10	<10	920	0.39
32S/12E-24B02	7/9/2013	630	30	43	3.9	110	33	295	170	<0.05	<1	0.076	<0.1	<0.01	0.14	<0.1	295	<10	<10	940	0.6
32S/12E-24B02	4/10/2013	630	31	44	4	100	32	310	160	<0.05	<1	0.08	<0.1	<0.01	0.13	<0.1	310	<10	<10	940	0.41
32S/12E-24B02	1/14/2013	620	30	43	4	97	31	305	170	<0.05	<1	0.079	<0.1	<0.01	0.12	<0.1	305	<10	<10	950	0.72
32S/12E-24B02	10/29/2012	650	29	45	4.2	100	32	280	160	<0.05	<1	0.074	0.14	<0.01	0.13	<0.1	280	<10	<10	950	0.56
32S/12E-24B02	7/23/2012	650	35	45	4.3	87	27	297	170	<0.05	<1	<0.1	<0.1	<0.01	0.12	<0.1	297	<10	<10	950	0.43
32S/12E-24B02	4/18/2012	630	37	39	3.7	88	28	310	171	<0.1	<1	<0.1	0.16	<0.01	0.099	<0.2	310	<10	<10	950	0.26
32S/12E-24B02	1/11/2012	650	33	46	4.6	110	32	300	150	<0.1	1.3	<0.1	0.21	<0.02	0.13	0.03	300	<10	<10	950	1.7
32S/12E-24B02	11/21/2011	640	32	39	3.9	93	29	290	150	<0.05	<1	0.064	<0.1	<0.01	0.096	<0.1	290	<10	<10	930	0.32
32S/12E-24B02	7/25/2011	640	36	48	4.2	97	31	290	165.3	<0.05	<1	<0.1	<0.1	<0.01	0.096	<0.1	290	<5	<5	950	0.88
32S/12E-24B02	4/20/2011	620	39	46	7.4	90	36	320	174	<0.05	<1	0.17	0.14	0.014	<0.005	<0.1	320	<2.0	<2.0	950	NA
32S/12E-24B02	1/24/2011	640	43	44	5.9	87	28	270	170	<0.05	<1.0	0.11	<0.1	0.14	0.085	<0.1	270	<2.0	<2.0	940	1.3
32S/12E-24B02	10/28/2010	650	43	50	4.5	110	35	270	160	<0.1	<1.0	0.12	<0.1	NA	0.085	<0.3	270	<10	<10	970	0.63
32S/12E-24B02	7/27/2010	598	42	48.9	4.29	111	40.5	318	160	< 0.10	1.3	0.0609	< 0.10	0.11	0.106	0.15	318	< 1.0	< 1.0	980	2.84
32S/12E-24B02	4/27/2010	668	46	52.7	4.73	111	43.2	349	150	< 0.10	1.3	0.0666	< 0.10	0.14	0.101	0.16	349	< 1.0	< 1.0	980	6.66
32S/12E-24B02	1/27/2010	622	45	58.0	5.39	115	32.2	270	160	0.18	0.84	0.117	< 0.10	0.14	0.209	0.16	270	< 1.0	< 1.0	920	3.49



Appendix A: NCMA Sentry Wells Water Quality Data



Well	Date	TDS mg/l	Chloride mg/l	Sodium mg/l	Potassium mg/l	Calcium mg/l	Magnesium mg/l	Bicarbonate as CaCO3 mg/l	Sulfate mg/l	Nitrate (as N) mg/l	Total Kjeldahl Nitrogen mg/l	Boron mg/l	Fluoride mg/l	Iodide mg/l	Manganese mg/l	Bromide mg/l	Total Alkalinity as CaCO3 mg/l	Carbonate as CaCO3 mg/l	Hydroxide as CaCO3 mg/l	Specific Conductivity umhos/cm	Iron mg/l
32S/12E-24B02	10/19/2009	600	49	59.1	5.12	112	30.1	281	160	< 0.10	0.98	0.0776	0.14	< 0.10	0.163	0.19	281	< 1.0	< 1.0	870	1.14
32S/12E-24B02	8/20/2009	630	49	63.5	5.85	128	30.1	288	150	< 0.10	0.98	NA	< 0.10	< 0.10	0.203	0.20	288	< 1.0	< 1.0	920	3.22
32S/12E-24B02	5/12/2009	622	82	67.5	6.33	114	34.5	282	150	NA	NA	NA	0.11	NA	0.252	0.24	282	< 1.0	< 1.0	990	6.76
32S/12E-24B02	3/26/1996	652	54	46	5	107	24	344	169	0.0452	NA	0.1	NA	NA	NA	NA	NA	NA	NA	NA	NA
32S/12E-24B02	6/9/1976	565	34	52	4	104	27	337	153	0.1355	NA	0.02	0.5	NA	NA	NA	NA	NA	NA	NA	NA
32S/12E-24B02	1/17/1966	651	62	79	5	101	32	380	147	0	NA	0.05	0.3	NA	NA	NA	NA	NA	NA	NA	NA

Appendix A: NCMA Sentry Wells Water Quality Data



Well	Date	TDS mg/l	Chloride mg/l	Sodium mg/l	Potassium mg/l	Calcium mg/l	Magnesium mg/l	Bicarbonate as CaCO3 mg/l	Sulfate mg/l	Nitrate (as N) mg/l	Total Kjeldahl Nitrogen mg/l	Boron mg/l	Fluoride mg/l	Iodide mg/l	Manganese mg/l	Bromide mg/l	Total Alkalinity as CaCO3 mg/l	Carbonate as CaCO3 mg/l	Hydroxide as CaCO3 mg/l	Specific Conductivity umhos/cm	Iron mg/l
32S/12E-24B03	10/6/2021	660	53	56	3.6	120	43	320	160	0.1	0.16	0.092	0.05	0.018	0.0098	0.16	320	8.2	8.2	1,010	0.044
32S/12E-24B03	7/15/2021	590	51	51	3.6	110	40	320	160	0.024	0.14	0.038	0.025	0.02	0.0093	0.17	320	8.2	8.2	1,020	0.19
32S/12E-24B03	4/7/2021	670	49	51	3.7	100	40	330	160	0.024	0.088	0.059	0.036	0.016	0.011	0.17	330	8.2	8.2		0.18
32S/12E-24B03	1/7/2021	490	51	53	3.9	110	41	330	170	0.024	0.39	0.068	0.026	0.02	0.01	0.21	330	4.1	4.1	992	0.17
32S/12E-24B03	10/12/2020	740	51	53	3.8	110.0	40	320	170	0	0.00	0.06	0.032	0.021	0.01	0.16	320	0	0	1,010	0.3
32S/12E-24B03	7/7/2020	760	53	55	3.9	110.0	42	330	170	0	0.20	0.06	0.050	0.021	0.01	0.22	330	8	8	1,020	0.2
32S/12E-24B03	4/22/2020	570	50	50	3.7	110.0	39	330	160	0	0.12	0.06	0.000	0.022	0.01	0.17	330	0	0	1,040	0.3
32S/12E-24B03	1/15/2020	590	50	55	4.0	120.0	42	330	160	0	0.08	0.07	0.000	0.025	0.01	0.13	330	0	0	972	0.3
32S/12E-24B03	10/14/2019	660	48	56	4.0	120.0	40	330	170	0	0.11	0.07	0.029	0.018	0.01	0.18	330	0	0	1,010	0.3
32S/12E-24B03	7/10/2019	590	49	53	4.2	110.0	44	330	160	0	0.15	0.07	0.020	0.018	0.01	0.18	330	0	0	1,000	0.2
32S/12E-24B03	4/10/2019	640	50	50	3.7	110	43	320	160	ND	0.15	0.063	0.037	0.017	0.012	0.16	320	ND	ND	1,020	0.44
32S/12E-24B03	1/8/2019	660	50	50	3.9	110	43	320	160	ND	0.12	0.065	0.039	0.021	0.011	0.14	320	ND	ND	1,020	0.21
32S/12E-24B03	10/9/2018	690	48	52	4.1	110	45	320	160	ND	0.19	0.065	ND	0.020	0.011	0.10	320	ND	ND	1,030	0.19
32S/12E-24B03	7/12/2018	650	47	51	3.8	110	42	320	150	ND	0.14	0.062	0.023	0.020	0.10	0.16	320	ND	ND	1,040	0.18
32S/12E-24B03	4/11/2018	670	50	53	4.0	110	44	320	160	ND	0.11	0.065	0.017	0.019	0.011	0.19	320	ND	ND	1,010	0.19
32S/12E-24B03	1/12/2018	620	48	57	3.9	110	45	330	160	ND	0.13	0.061	0.041	0.023	0.011	0.18	330	ND	ND	993	0.19
32S/12E-24B03	10/11/2017	660	49	54	4	120	45	330	160	ND	0.16	0.069	0.022	0.02	0.011	0.19	330	ND	ND	1020	0.20
32S/12E-24B03	7/12/2017	790	46	54	4	120	45	320	160	ND	ND	0.062	0.015	0.02	0.011	0.18	320	ND	ND	1,010	0.19
32S/12E-24B03	4/11/2017	670	48	55	4.1	120	45	330	160	ND	0.17	0.058	ND	0.019	0.012	0.21	330	ND	ND	988	0.23
32S/12E-24B03	1/12/2017	670	47	58	4.3	130	50	340	160	ND	ND	0.068	0.012	0.024	0.014	0.18	340	ND	ND	1,000	0.27
32S/12E-24B03	10/11/2016	680	49	53	4	110	47	340	160	ND	ND	0.06	0.015	0.025	0.013	0.17	340	ND	ND	1020	0.22
32S/12E-24B03	7/19/2016	690	47	54	4.1	110	46	340	160	<0.022	0.32	0.063	0.017	0.016	0.013	0.20	340	<8.2	<8.2	1,010	0.32
32S/12E-24B03	4/12/2016	680	48	55	4.1	110	45	320	160	<0.022	0.21	0.056	0.019	0.018	0.012	0.17	320	<8.2	<8.2	1,010	0.28
32S/12E-24B03	1/12/2016	610	51	53	4.0	110	46	320	170	<0.022	0.11	0.037	0.038	<0.10	0.015	0.19	320	<8.2	<8.2	1,050	0.27
32S/12E-24B03	10/15/2015	650	44	48	4.4	100	42	325	160	<0.05	<1	<0.05	<0.10	0.016	0.010	<0.10	325	<10	<10	1,020	0.21
32S/12E-24B03	7/15/2015	680	46	60	40.0	120	47	333	160	<0.05	<1	0.064	<0.1	0.01	0.010	<0.1	333	<10	<10	1,020	0.20
32S/12E-24B03	4/15/2015	650	46	44	3.5	96	38	330	170	<0.05	<1	0.061	<0.1	0.012	0.0080	<0.1	330	<10	<10	980	0.17
32S/12E-24B03	1/14/2015	670	47	48	3.6	110	43	330	170	<0.05	<1	0.052	<0.10	0.01	0.090	<0.1	330	<10	<10	970	0.17
32S/12E-24B03	10/14/2014	650	40	48	4.1	100	41	330	142	<0.05	<1	0.061	<0.1	<0.01	0.010	<0.1	330	<10	<10	1,010	0.19
32S/12E-24B03	7/30/2014	650	45	45	3.1	94	40	390	150	<0.05	<1	<0.1	<0.1	<0.01	<0.005	<0.1	390	<10	<10	1,020	0.19
32S/12E-24B03	4/16/2014	660	43	46	4.3	90	35	330	150	0.23	<1	0.056	<0.1	<0.01	<0.005	0.11	330	<10	<10	1,010	0.16
32S/12E-24B03	1/15/2014	660	45	52	4.0	100	41	320	165	<0.05	<1	<0.05	<0.1	<0.01	0.0090	<0.1	320	<10	<10	1,010	0.17
32S/12E-24B03	10/15/2013	720	40	51	4.0	100	40	310	170	<0.05	<1	<0.05	<0.1	<0.01	0.0090	<0.1	310	<10	<10	1,010	0.2
32S/12E-24B03	7/9/2013	660	46	47	3.9	110	41	310	170	<0.05	<1	0.066	<0.1	<0.01	0.0100	<0.1	310	<10	<10	1,010	0.27
32S/12E-24B03	4/10/2013	670	44	46	3.8	96	38	320	160	<0.05	<1	0.071	<0.1	<0.01	0.0080	<0.1	320	<10	<10	1,010	0.19
32S/12E-24B03	1/14/2013	630	45	47	3.9	96	37	320	170	<0.05	<1	0.065	<0.1	<0.01	0.0080	<0.1	320	<10	<10	1,010	0.26
32S/12E-24B03	10/29/2012	680	45	49	4.1	100	39	305	158	<0.05	<1	0.069	0.1	<0.01	0.0090	<0.1	305	<10	<10	1,010	0.22
32S/12E-24B03	7/23/2012	670	49	47	4.1	86	35	318	170	<0.05	<1	<0.1	<0.1	<0.01	0.0150	<0.1	318	<10	<10	1,010	0.24
32S/12E-24B03	4/18/2012	640	50	40	3.4	84	33	320	160	<0.1	<1	<0.1	<0.2	<0.01	0.0070	<0.2	320	<10	<10	1,010	0.23
32S/12E-24B03	1/12/2012	660	46	48	3.2	92	36	300	150	<0.1	<1	<0.1	0.35	<0.02	0.0080	<0.2	300	<10	<10	1,000	0.15
32S/12E-24B03	11/21/2011	660	43	41	3.7	91	34	310	150	<0.05	1.6	0.046	<0.1	0.014	0.0090	<0.1	310	<10	<10	970	0.12
32S/12E-24B03	7/25/2011	650	46	50	6.0	98	38	310	159.6	<0.05	<1	<0.1	<0.1	0.011	0.0100	<0.1	310	<5	<5	1,010	0.21
32S/12E-24B03	4/20/2011	650	47	48	4.6	95	31	310	168	<0.05	<1	0.11	0.08	0.015	0.0080	<0.1	310	<2.0	<2.0	1,020	NA
32S/12E-24B03	1/24/2011	660	46	44	5.6	87	33	320	160	<0.05	<1.0	NA	<0.1	0.15	0.0096	<0.1	320	<2.0	<2.0	1,020	0.22
32S/12E-24B03	10/28/2010	660	44	48	3.8	110	39	315	50	<0.1	<1.0	0.089	<0.1	NA	0.0120	<0.3	315	<10	<10	1,020	0.55
32S/12E-24B03	7/27/2010	610	44	51.4	8.34	112	41.6	328	160	< 0.10	1.8	0.0533	< 0.10	0.17	0.0602	0.16	328	< 1.0	< 1.0	1,000	6.7
32S/12E-24B03	4/27/2010	666	45	53.2	4.84	118	44	357	150	< 0.10	1.5	0.0636	< 0.10	0.1	0.0519	0.17	357	< 1.0	< 1.0	980	9.71
32S/12E-24B03	1/27/2010	672	48	56.4	5.40	119	43.4	336	150	< 0.10	1.4	0.101	< 0.10	0.15	0.140	0.15	336	< 1.0	< 1.0	1,000	5.18

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Well	Date	TDS mg/l	Chloride mg/l	Sodium mg/l	Potassium mg/l	Calcium mg/l	Magnesium mg/l	Bicarbonate as CaCO3 mg/l	Sulfate mg/l	Nitrate (as N) mg/l	Total Kjeldahl Nitrogen mg/l	Boron mg/l	Fluoride mg/l	Iodide mg/l	Manganese mg/l	Bromide mg/l	Total Alkalinity as CaCO3 mg/l	Carbonate as CaCO3 mg/l	Hydroxide as CaCO3 mg/l	Specific Conductivity umhos/cm	Iron mg/l
32S/12E-24B03	10/19/2009	622	40	55.1	3.93	110	42.6	342	160	< 0.10	< 0.50	0.0613	< 0.10	0.13	0.0181	0.14	342	< 1.0	< 1.0	880	0.343
32S/12E-24B03	8/19/2009	680	47	54.9	5.21	128	43.4	337	150	< 0.10	2.2	NA	< 0.10	0.66	0.182	0.15	337	< 1.0	< 1.0	1,000	14.3
32S/12E-24B03	5/12/2009	645	44	53.2	4.53	108	41.8	332	140	NA	NA	NA	< 0.10	NA	0.124	0.16	332	< 1.0	< 1.0	1,000	5.9
32S/12E-24B03	3/26/1996	646	41	52	4.3	104	42	412	164	0.0452	NA	0.12	NA	NA	NA	NA	NA	NA	NA	NA	NA
32S/12E-24B03	6/9/1976	569	36	53	3.7	85	39	330	165	0	NA	0.06	0.4	NA	NA	NA	NA	NA	NA	NA	NA
32S/12E-24B03	1/17/1966	670	79	74	5	103	36	345	158	1	NA	0	0.2	NA	NA	NA	NA	NA	NA	NA	NA

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Well	Date	TDS mg/l	Chloride mg/l	Sodium mg/l	Potassium mg/l	Calcium mg/l	Magnesium mg/l	Bicarbonate as CaCO3 mg/l	Sulfate mg/l	Nitrate (as N) mg/l	Total Kjeldahl Nitrogen mg/l	Boron mg/l	Fluoride mg/l	Iodide mg/l	Manganese mg/l	Bromide mg/l	Total Alkalinity as CaCO3 mg/l	Carbonate as CaCO3 mg/l	Hydroxide as CaCO3 mg/l	Specific Conductivity umhos/cm	Iron mg/l
32S/13E-30F01	10/6/2021	450	67	71	1.9	47	21	81	120	13	0.19	0.12	0.056	0.1	0.01	0.26	81	4.1	4.1	710	0.05
32S/13E-30F01	4/7/2021	670	70	66	1.9	41	20	85	130	13	0.17	0.078	0.09	0.005	0.004	0.31	85	4.1	4.1		0.03
32S/13E-30F01	10/12/2020	490	66	68	2.0	44.0	20	83	120	13	0.12	0.08	0.057	0.000	0.00	0.26	83	0	0	700	0.0
32S/13E-30F01	4/22/2020	500	64	68	2.1	44.0	19	84	120	13	0.15	0.08	0.033	0.000	0.00	0.26	84	0	0	719	0.0
32S/13E-30F01	10/14/2019	460	62	69	2.0	43.0	18	82	120	13	0.11	0.09	0.046	0.000	0.00	0.29	82	0	0	696	0.1
32S/13E-30F01	4/10/2019	480	61	60	2.1	41	19	85	120	13	0.12	0.09	0.06	ND	ND	0.19	85	ND	ND	693	0.04
32S/13E-30F01	10/10/2018	460	62	72	2.3	44	21	84	120	13	0.09	0.09	0.034	ND	ND	0.16	84	ND	ND	696	ND
32S/13E-30F01	4/12/2018	470	58	69	2.3	44	21	82	110	12	0.14	0.09	0.030	ND	ND	0.23	82	ND	ND	699	ND
32S/13E-30F01	10/11/2017	500	68	67	2.2	46	23	97	120	13	0.18	0.093	0.045	ND	0.018	0.28	97	ND	ND	752	0.061
32S/13E-30F01	4/12/2017	510	61	65	2.1	42	20	85	120	13	0.12	0.074	0.062	ND	ND	0.28	85	ND	ND	682	0.045
32S/13E-30F01	10/11/2016	480	62	72	2.3	46	23	91	120	12	0.13	0.09	0.046	ND	ND	0.32	91	ND	ND	702	ND
32S/13E-30F01	4/13/2016	460	60	70	2.3	43	21	90	120	12	0.2	0.086	0.054	<0.01	<.0040	0.30	90	<4.1	<4.1	696	<0.030
32S/13E-30F01	10/14/2015	450	58	61	2.1	39	19	87	120	13	<1	0.084	<0.10	<0.01	<0.005	0.18	87	<10	<10	700	<0.05
32S/13E-30F01	4/15/2015	460	64	60	2.0	40	19	90	130	12	<1	0.081	<0.1	<0.01	<0.005	0.202	90	<10	<10	700	<0.05
32S/13E-30F01	1/14/2015	550	95	69	2	50	24	98	140	12.50	<1	0.085	<0.1	<0.01	<0.005	0.2	98	<10	<10	820	<0.05
32S/13E-30F01	10/14/2014	470	58	64	2	42	19	84	120	10.00	<1	0.081	<0.1	<0.01	<0.005	0.2	84	<10	<10	730	<0.05
32S/13E-30F01	7/30/2014	540	89	71	2	46	24	94	130	13.6	<1	<0.1	<0.1	<0.01	<0.005	0.101	94	<10	<10	860	<0.05
32S/13E-30F01	4/16/2014	610	122	78	3.3	47	22	100	140	12	<1	0.100	<0.1	<0.01	<0.005	0.17	100	<10	<10	970	<0.05
32S/13E-30F01	1/15/2014	510	80	69	2.3	45	22	94	136	12.6	13.00	<0.1	<0.1	<0.01	<0.005	0.19	94	<10	<10	810	<0.05
32S/13E-30F01	10/15/2013	530	78	73	2.3	47	22	86	140	12	<1	0.072	<0.1	<0.01	<.005	0.17	86	<10	<10	830	<0.05
32S/13E-30F01	7/10/2013	480	80	64	2.2	49	22	85	140	12.2	<1	0.089	<0.1	<0.01	<0.005	<0.1	85	<10	<10	770	<0.05
32S/13E-30F01	4/11/2013	460	60	60	2.20	38	18	78	120	12	<1	0.091	<0.1	<0.01	<0.005	0.2	78	<10	<10	710	<0.05
32S/13E-30F01	1/15/2013	440	65	64	2.40	40	19	95	130	12	<1	0.090	<0.1	<0.01	<0.005	0.11	95	<10	<10	720	0.05
32S/13E-30F01	10/30/2012	470	60	66	2.50	43	20	75	123	12	<1	0.087	<0.1	<0.01	<0.005	0.13	75	<10	<10	720	<0.05
32S/13E-30F01	7/24/2012	470	73	66	2.70	36	18	86	120	13	<1	<0.1	<0.1	<0.01	0.019	0.11	86	<10	<10	720	<0.05
32S/13E-30F01	4/19/2012	450	72	52	1.90	32	15	81	130	13	<1	<0.1	<0.2	<0.01	<0.005	<0.2	81	<10	<10	700	<0.1
32S/13E-30F01	1/10/2012	460	67	61	2.00	35	17	81	120	11	<1	<0.1	0.12	<0.01	<0.005	<0.1	81	<10	<10	720	<0.1
32S/13E-30F01	11/17/2011	470	70	82	2.40	40	19	78	120	12	<1	<0.1	<0.1	<0.01	<0.005	0.16	78	<10	<10	720	<0.1
32S/13E-30F01	7/25/2011	460	66	68	4.40	37	19	78	117.4	12.17	<1	0.100	0.101	<0.01	0.014	0.178	78	<5	<5	720	0.11
32S/13E-30F01	4/20/2011	460	71	69	2.60	36	14	87	124	12	<1	0.180	0.11	<0.01	<0.005	0.17	87	<2.0	<2.0	730	NA
32S/13E-30F01	1/24/2011	510	75	64	4.00	34	18	83	140	11	<1.0	0.170	0.11	<0.10	<0.005	<0.1	83	<2.0	<2.0	780	<0.1
32S/13E-30F01	10/21/2010	540	100	73	2.00	43	21	88	120	13	<1.0	0.067	<0.1	NA	<0.005	<0.3	88	<10	<10	894	<.1
32S/13E-30F01	7/26/2010	464	74	82.2	2.16	47.9	25.1	88.0	120	12	< 0.50	0.098	< 0.10	< 0.10	0.0817	0.37	88.0	< 1.0	< 1.0	710	0.79
32S/13E-30F01	4/27/2010	534	72	77.1	2.59	45.8	23.6	100	140	9.8	0.56	0.129	< 0.10	< 0.10	0.112	0.29	100	< 1.0	< 1.0	780	1.02
32S/13E-30F01	1/28/2010	725	140	99.9	2.70	76.4	35.8	214	170	1.6	0.84	0.120	< 0.10	< 0.10	0.112	0.56	214	< 1.0	< 1.0	1,200	0.640
32S/13E-30F01	10/19/2009	522	74	85.6	2.35	52.8	26.3	102	150	13	0.70	0.136	0.13	< 0.10	0.123	0.32	102	< 1.0	< 1.0	770	1.30
32S/13E-30F01	8/19/2009	648	92	98.9	3.84	63.1	31.9	113	190	10	0.56	NA	< 0.10	0.12	1.03	0.32	113	< 1.0	< 1.0	970	4.52
32S/13E-30F01	5/12/2009	792	110	108	2.89	80.2	39.9	136	280	NA	NA	NA	< 0.10	NA	0.0353	0.39	136	< 1.0	< 1.0	1,200	0.281

Appendix A: NCMA Sentry Wells Water Quality Data



Well	Date	TDS mg/l	Chloride mg/l	Sodium mg/l	Potassium mg/l	Calcium mg/l	Magnesium mg/l	Bicarbonate as CaCO3 mg/l	Sulfate mg/l	Nitrate (as N) mg/l	Total Kjeldahl Nitrogen mg/l	Boron mg/l	Fluoride mg/l	Iodide mg/l	Manganese mg/l	Bromide mg/l	Total Alkalinity as CaCO3 mg/l	Carbonate as CaCO3 mg/l	Hydroxide as CaCO3 mg/l	Specific Conductivity umhos/cm	Iron mg/l
32S/13E-30F02	10/6/2021	550	53	46	2.3	77	31	180	130	14	0.15	0.11	0.093	0.1	0.052	0.66	180	4.1	4.1	838	0.05
32S/13E-30F02	7/16/2021	580	51	47	2.7	78	31	190	130	14	0.12	0.12	0.093	0.005	0.0073	0.62	190	4.1	4.1	834	0.03
32S/13E-30F02	4/7/2021	560	53	46	2.4	75	32	180	130	14	0.16	0.078	0.093	0.005	0.014	0.59	180	4.1	4.1	834	0.03
32S/13E-30F02	1/6/2021	550	52	44	2.6	73	31	180	130	14	0.45	0.088	0.085	0.005	0.0082	0.6	180	4.1	4.1	823	0.03
32S/13E-30F02	10/12/2020	540	52	45	2.4	76.0	30	180	130	14	0.19	0.08	0.085	0.000	0.01	0.62	180	0	0	836	0.0
32S/13E-30F02	7/7/2020	600	53	51	2.7	83.0	33	180	130	14	0.20	0.10	0.080	0.100	0.01	0.68	180	4	4	845	0.1
32S/13E-30F02	4/22/2020	580	52	47	2.6	78.0	31	180	130	14	0.18	0.09	0.086	0.000	0.02	0.66	180	0	0	857	0.0
32S/13E-30F02	1/14/2020	550	53	48	2.8	84.0	32	180	130	14	0.10	0.10	0.079	0.000	0.02	0.40	180	0	0	808	0.1
32S/13E-30F02	10/14/2019	550	51	50	2.7	83.0	32	180	130	14	0.00	0.10	0.077	0.000	0.15	0.63	180	0	0	841	0.1
32S/13E-30F02	7/9/2019	620	51	47	2.5	82.0	35	190	120	14	0.13	0.09	0.084	0.000	0.02	0.49	190	0	0	838	0.0
32S/13E-30F02	4/10/2019	570	53	43	2.7	78	32	180	130	14	0.085	0.093	0.090	ND	0.046	0.47	180	ND	ND	852	0.05
32S/13E-30F02	1/8/2019	560	52	44	2.7	80	34	190	130	14	0.059	0.094	0.091	ND	0.013	0.62	190	ND	ND	845	ND
32S/13E-30F02	10/10/2018	580	51	50	2.9	83	35	190	130	14	0.07	0.094	0.07	ND	0.020	0.42	190	ND	ND	848	0.07
32S/13E-30F02	7/10/2018	580	53	48	2.7	83	36	190	130	14	0.23	0.095	0.11	ND	0.026	0.59	190	ND	ND	893	0.045
32S/13E-30F02	4/12/2018	580	48	48	2.8	82	35	190	120	13	0.12	0.097	0.072	ND	0.022	0.48	190	ND	ND	854	ND
32S/13E-30F02	1/11/2018	580	52	51	2.7	82	36	200	130	14	0.14	0.091	0.12	ND	0.032	0.68	200	ND	ND	846	ND
32S/13E-30F02	10/11/2017	580	51	46	2.6	80	34	200	130	14	0.16	0.094	0.083	ND	0.037	0.65	200	ND	ND	877	0.037
32S/13E-30F02	7/12/2017	570	52	49	2.9	89	39	200	130	13	ND	0.094	0.096	ND	0.15	0.66	200	ND	ND	861	ND
32S/13E-30F02	4/12/2017	620	52	51	2.9	88	38	200	130	13	ND	0.088	0.063	ND	0.022	0.67	200	ND	ND	856	0.041
32S/13E-30F02	1/10/2017	590	52	50	2.8	90	37	220	140	13	ND	0.09	0.08	ND	1.1	0.6	220	ND	ND	884	0.15
32S/13E-30F02	10/11/2016	600	52	50	2.9	89	40	220	140	13	0.089	0.09	0.074	ND	0.025	0.6	220	ND	ND	886	ND
32S/13E-30F02	7/20/2016	590	51	51	3.0	88	38	220	130	13	0.14	0.091	0.072	<0.010	0.170	0.57	220	<4.1	<4.1	880	0.033
32S/13E-30F02	4/13/2016	570	51	51	2.9	89	40	200	130	13	0.08	0.1	0.086	<0.010	0.014	0.60	200	<4.1	<4.1	876	<0.030
32S/13E-30F02	1/13/2016	610	53	51	2.9	89	38	210	140	13	0.14	0.091	0.15	<0.010	0.035	0.47	210	<4.1	<4.1	858	<0.030
32S/13E-30F02	10/14/2015	570	49	45	2.8	80	35	212	130	13	<1	0.085	<0.10	<0.01	0.20	0.39	212	<10	<10	890	0.078
32S/13E-30F02	7/15/2015	610	50	51	2.0	88	38	204	140	13	<1	0.091	<0.1	<0.01	0.048	0.30	204	<10	<10	890	<0.05
32S/13E-30F02	4/15/2015	570	51	43	2.7	78	34	200	140	13.5	<1	0.085	<0.1	<0.01	0.087	0.42	200	<10	<10	850	<0.05
32S/13E-30F02	1/14/2015	590	51	42	2.4	80	34	210	140	13	<1	0.08	<0.1	<0.01	0.014	0.324	210	<10	<10	860	<0.05
32S/13E-30F02	10/14/2014	600	46	42	2.6	76	32	310	120	12	<1	0.08	<0.1	<0.01	0.22	0.37	310	<10	<10	890	<0.05
32S/13E-30F02	7/30/2014	580	49	46	2.6	80	35	210	130	13	<1	<0.1	<0.1	<0.01	0.02	0.27	210	<10	<10	890	<0.05
32S/13E-30F02	4/16/2014	590	49	45	3.3	68	30	200	130	12	<1	0.089	<0.1	<0.01	0.011	0.44	200	<10	<10	890	<0.05
32S/13E-30F02	1/15/2014	580	50	45	2.7	76	31	190	136	13.1	13.4	<0.1	<0.1	<0.01	0.054	0.4	190	<10	<10	890	<0.05
32S/13E-30F02	10/15/2013	570	50	45	2.7	75	33	190	140	12	<1	0.69	0.19	<0.01	0.099	0.38	190	<10	<10	890	<0.05
32S/13E-30F02	7/10/2013	570	50	38	2.6	78	32	190	180	<0.05	<1	0.08	0.13	<0.01	0.14	<0.1	190	<10	<10	880	<0.05
32S/13E-30F02	4/11/2013	590	50	41	2.6	70	30	190	140	14	<1	0.09	0.1	<0.01	0.082	0.43	190	<10	<10	880	<0.05
32S/13E-30F02	1/15/2013	550	50	44	2.9	72	31	200	140	13	<1	0.09	0.1	<0.01	0.011	0.32	200	<10	<10	880	0.12
32S/13E-30F02	10/30/2012	610	48	45	3.0	79	34	188	135	13	<1	0.09	<0.1	<0.01	0.06	0.31	188	<10	<10	890	0.011
32S/13E-30F02	7/24/2012	590	56	46	3.2	69	30	194	140	14	<1	<0.1	0.11	<0.01	0.038	0.27	194	<10	<10	880	<0.05
32S/13E-30F02	4/19/2012	600	60	40	2.7	68	30	200	140	14	<1	<0.1	<0.2	<0.01	0.19	0.3	200	<10	<10	890	0.11
32S/13E-30F02	1/12/2012	610	52	45	3.0	73	32	200	130	12	<1	<0.1	0.25	<0.02	0.29	0.33	200	<10	<10	890	<0.1
32S/13E-30F02	11/21/2011	580	49	38	2.7	73	30	190	120	13	<1	0.07	<0.1	<0.01	0.022	0.34	190	<10	<10	870	<0.1
32S/13E-30F02	7/25/2011	590	52	46	5.1	73	31	190	134.3	13.19	<1	<0.1	0.127	<0.1	0.025	0.387	190	<5	<5	900	<0.1
32S/13E-30F02	4/20/2011	600	54	57	4.2	74	29	200	141	13	<1	0.18	0.17	<0.01	0.025	0.38	200	<2.0	<2.0	920	NA
32S/13E-30F02	1/24/2011	600	51	43	4.9	71	31	210	140	12	<1.0	0.15	0.12	0.27	0.041	0.3	210	<2.0	<2.0	920	<0.1
32S/13E-30F02	10/28/2010	610	49	38	2.3	70	30	210	130	11	<1.0	0.10	<0.1	NA	0.0094	<0.3	210	<10	<10	920	<0.1
32S/13E-30F02	7/26/2010	560	49	45.8	2.95	85.4	36.8	223	130	11	2.5	0.0928	< 0.10	0.13	0.0646	0.59	223	< 1.0	< 1.0	890	< 0.100
32S/13E-30F02	4/27/2010	634	51	50.3	3.12	87.9	38.6	225	130	10	0.8	0.112	< 0.10	< 0.10	0.615	0.51	225	< 1.0	< 1.0	880	3.28
32S/13E-30F02	1/28/2010	604	44	52.2	4.47	92.1	38.5	230	150	11	1.4	0.127	< 0.10	< 0.10	0.913	0.48	230	< 1.0	< 1.0	920	4.55

Appendix A: NCMA Sentry Wells Water Quality Data



Well	Date	TDS mg/l	Chloride mg/l	Sodium mg/l	Potassium mg/l	Calcium mg/l	Magnesium mg/l	Bicarbonate as CaCO3 mg/l	Sulfate mg/l	Nitrate (as N) mg/l	Total Kjeldahl Nitrogen mg/l	Boron mg/l	Fluoride mg/l	Iodide mg/l	Manganese mg/l	Bromide mg/l	Total Alkalinity as CaCO3 mg/l	Carbonate as CaCO3 mg/l	Hydroxide as CaCO3 mg/l	Specific Conductivity umhos/cm	Iron mg/l
32S/13E-30F02	10/19/2009	566	49	49.5	2.80	88.3	37.6	240	140	11	1.0	0.0942	0.17	< 0.10	0.924	0.51	240	< 1.0	< 1.0	850	2.15
32S/13E-30F02	8/19/2009	614	49	51.8	3.19	87.3	36.8	225	130	11	2.00	NA	0.10	< 0.10	2.24	0.54	225	< 1.0	< 1.0	920	19.4
32S/13E-30F02	5/12/2009	514	54	48.7	3.26	81.1	34.9	206	120	NA	NA	NA	0.11	NA	1.87	0.53	206	< 1.0	< 1.0	890	3.23
32S/13E-30F02	3/27/1996	678	49	52	3.8	98	42	305	166	11.069	NA	0.16	NA	NA	NA	NA	NA	NA	NA	NA	NA
32S/13E-30F02	6/9/1976	637	48	55	2.8	98	43	343	172	3.9758	NA	0.1	0.5	NA	NA	NA	NA	NA	NA	NA	NA
32S/13E-30F02	1/20/1966	580	68	47	2	94	38	280	152	27	NA	0.08	0.2	NA	NA	NA	NA	NA	NA	NA	NA



Appendix A: NCMA Sentry Wells Water Quality Data



Well	Date	TDS mg/l	Chloride mg/l	Sodium mg/l	Potassium mg/l	Calcium mg/l	Magnesium mg/l	Bicarbonate as CaCO3 mg/l	Sulfate mg/l	Nitrate (as N) mg/l	Total Kjeldahl Nitrogen mg/l	Boron mg/l	Fluoride mg/l	Iodide mg/l	Manganese mg/l	Bromide mg/l	Total Alkalinity as CaCO3 mg/l	Carbonate as CaCO3 mg/l	Hydroxide as CaCO3 mg/l	Specific Conductivity umhos/cm	Iron mg/l
32S/13E-30F03	10/6/2021	640	50	42	2.3	110	46	300	170	0.1	0.15	0.078	0.14	0.052	0.018	0.25	300	4.1	4.1	982	0.05
32S/13E-30F03	7/16/2021	660	48	39	2.4	99	43	310	170	0.024	0.15	0.083	0.13	0.038	0.019	0.23	310	4.1	4.1	975	0.03
32S/13E-30F03	4/7/2021	650	49	40	2.4	100	43	310	170	0.024	0.097	0.05	0.15	0.029	0.019	0.24	310	4.1	4.1		0.033
32S/13E-30F03	1/6/2021	660	50	43	2.7	110	46	310	170	0.024	0.32	0.064	0.15	0.037	0.025	0.27	310	4.1	4.1	971	0.05
32S/13E-30F03	10/12/2020	710	49	41	2.5	110.0	43	310	170	0	0.00	0.06	0.140	0.037	0.02	0.21	310	0	0	975	0.0
32S/13E-30F03	7/7/2020	720	50	42	2.6	110.0	45	290	170	0	0.10	0.06	0.120	0.038	0.02	0.22	290	4	4	985	0.1
32S/13E-30F03	4/22/2020	620	49	41	2.6	110.0	44	310	170	0	0.10	0.06	0.140	0.042	0.02	0.23	310	0	0	999	0.1
32S/13E-30F03	1/14/2020	600	49	41	2.6	110.0	44	300	170	0	0.08	0.06	0.120	0.044	0.02	0.16	300	0	0	940	0.1
32S/13E-30F03	10/14/2019	620	47	44	2.7	110.0	44	300	170	0	0.00	0.06	0.120	0.035	0.02	0.16	300	0	0	980	0.1
32S/13E-30F03	7/9/2019	650	47	41	2.5	110.0	49	310	170	0	0.09	0.06	0.140	0.039	0.02	0.21	310	0	0	975	0.0
32S/13E-30F03	4/10/2019	630	49	37	2.5	100	45	310	170	ND	0.140	0.060	0.14	0.030	0.020	0.19	310	ND	ND	988	0.05
32S/13E-30F03	1/8/2019	660	48	39	2.6	110	46	310	170	ND	0.068	0.063	0.15	0.037	0.020	0.22	310	ND	ND	990	0.08
32S/13E-30F03	10/10/2018	650	48	44	2.9	120	51	310	170	ND	0.12	0.067	0.10	0.036	0.022	0.16	310	ND	ND	981	0.05
32S/13E-30F03	7/10/2018	630	49	42	2.6	110	49	310	170	ND	ND	0.062	0.18	0.035	0.019	0.22	310	ND	ND	1,030	ND
32S/13E-30F03	4/12/2018	640	45	43	2.6	110	46	300	160	ND	0.15	0.066	0.14	0.036	0.021	0.16	300	ND	ND	980	0.035
32S/13E-30F03	1/11/2018	650	48	45	2.8	120	51	310	170	ND	0.13	0.044	0.15	0.041	0.021	0.26	310	ND	ND	966	0.037
32S/13E-30F03	10/11/2017	660	47	42	2.6	110	50	320	170	ND	0.13	0.067	0.13	0.037	0.021	0.2	320	ND	ND	996	0.056
32S/13E-30F03	7/12/2017	750	46	44	3	120	53	280	170	ND	ND	0.064	0.14	0.035	0.023	0.2	280	ND	ND	980	0.046
32S/13E-30F03	4/12/2017	640	48	45	2.9	120	51	310	170	ND	ND	0.076	0.16	0.035	0.022	0.22	310	ND	ND	972	0.065
32S/13E-30F03	1/10/2017	670	49	44	2.7	120	51	330	170	ND	ND	0.064	0.13	0.045	0.023	0.31	330	ND	ND	993	0.14
32S/13E-30F03	10/11/2016	680	48	41	2.6	110	49	320	170	ND	0.11	0.056	0.13	0.042	0.02	0.22	320	ND	ND	992	ND
32S/13E-30F03	7/20/2016	660	47	44	2.9	110	51	320	170	<0.022	<0.080	0.062	0.12	0.032	0.023	0.20	320	<4.1	<4.1	992	0.04
32S/13E-30F03	4/13/2016	650	47	42	2.7	110	51	310	170	<0.022	0.2	0.072	0.13	0.028	0.021	0.22	310	<4.1	<4.1	981	0.03
32S/13E-30F03	1/14/2016	580	49	45	2.8	120	52	310	180	0.05	0.1	0.061	0.2	<0.010	0.025	0.21	310	<4.1	<4.1	947	0.054
32S/13E-30F03	10/14/2015	660	44	38	2.8	100	44	306	160	<0.05	<1	<0.05	0.13	0.028	0.021	0.10	306	<10	<10	990	<0.05
32S/13E-30F03	7/15/2015	670	45	45	1.9	120	51	305	170	<0.05	<1	0.060	0.11	0.03	0.019	<0.1	305	<10	<10	990	<0.05
32S/13E-30F03	4/15/2015	650	46	35	2.3	99	44	300	170	<0.05	<1	0.056	0.126	0.02	0.015	0.1	300	<10	<10	950	<0.05
32S/13E-30F03	1/14/2015	670	46	36	2.2	100	45	310	180	<0.05	<1	0.05	0.121	0.02	0.016	<0.1	310	<10	<10	950	0.01
32S/13E-30F03	10/14/2014	660	41	35	3.0	99	42	310	150	<0.05	<1	<0.05	<0.1	0.011	0.017	<0.1	310	<10	<10	990	<0.05
32S/13E-30F03	7/30/2014	660	44	38	2.6	96	46	300	160	<0.05	<1	0.28	0.12	0.02	0.015	<0.1	300	<10	<10	990	<0.05
32S/13E-30F03	4/16/2014	640	44	36	3.3	55	38	310	169	<0.05	<1	0.062	0.12	0.02	0.011	0.11	310	<10	<10	990	<0.05
32S/13E-30F03	1/15/2014	650	45	35	2.5	90	41	300	173	<0.05	<1	<0.05	0.13	0.01	0.015	0.12	300	<10	<10	990	<0.05
32S/13E-30F03	10/15/2013	670	41	40	2.7	100	44	280	179	<0.05	<1	<0.05	0.14	0.02	0.016	<0.1	280	<10	<10	990	<0.05
32S/13E-30F03	7/10/2013	650	50	33	2.4	100	43	290	140	13.5	<1	0.055	<0.1	0.02	0.017	0.23	290	<10	<10	990	<0.05
32S/13E-30F03	4/11/2013	670	45	36	2.7	94	42	300	170	<0.05	<1	0.06	0.13	0.02	0.016	0.12	300	<10	<10	990	<0.05
32S/13E-30F03	1/15/2013	630	45	36	2.3	92	41	295	180	<0.05	<1	0.06	0.11	<0.01	0.015	<0.1	295	<10	<10	980	<0.05
32S/13E-30F03	10/30/2012	650	43	40	3.1	100	46	280	170	<0.05	<1	0.06	<0.1	0.03	0.016	<0.1	280	<10	<10	990	0.02
32S/13E-30F03	7/24/2012	640	51	36	2.7	81	37	296	180	<0.05	<1	<0.1	0.17	<0.01	0.016	0.2	296	<10	<10	990	<0.05
32S/13E-30F03	4/19/2012	640	54	32	2.3	84	36	290	180	<0.1	<1	<0.1	<0.2	0.01	0.014	<0.2	290	<10	<10	990	<0.1
32S/13E-30F03	1/12/2012	660	46	39	2.1	94	42	280	160	<0.1	<1	<0.1	0.2	0.025	0.016	<0.2	280	<10	<10	990	<0.1
32S/13E-30F03	11/21/2011	650	43	33	2.6	93	39	290	160	<0.05	<1	0.04	0.15	0.028	0.016	<0.1	290	<10	<10	960	<0.1
32S/13E-30F03	7/25/2011	650	47	46	5.1	73	31	190	170.5	<0.05	<1	<0.1	0.155	0.02	0.025	<0.1	190	<5	<5	900	<0.1
32S/13E-30F03	4/21/2011	650	48	40	3.8	91	34	280	179	<0.05	<1	0.1	0.2	0.029	0.015	0.11	280	<2.0	<2.0	1,000	NA
32S/13E-30F03	1/24/2011	650	46	36	4.7	87	38	300	170	<0.05	<1.0	0.11	0.17	0.24	0.016	<0.1	300	<2.0	<2.0	990	<0.1
32S/13E-30F03	10/28/2010	650	46	37	2.7	100	43	280	160	<0.1	<1.0	0.10	<0.1	NA	0.032	<0.3	280	<10	<10	1,000	0.53
32S/13E-30F03	7/26/2010	608	45	43.8	2.94	107	46.8	294	160	1.3	0.84	0.0479	<0.10	0.10	0.129	0.24	294	<1.0	<1.0	900	7.55
32S/13E-30F03	4/27/2010	668	48	40.8	2.91	101	44.7	304	160	0.21	0.84	0.0733	0.14	0.11	0.0694	0.23	304	<1.0	<1.0	940	2.62
32S/13E-30F03	1/28/2010	656	40	43.1	3.91	112	47.2	310	180	<0.20	2.8	0.0833	0.13	<0.10	0.287	0.21	310	<1.0	<1.0	980	4.80

Appendix A: NCMA Sentry Wells Water Quality Data



Well	Date	TDS mg/l	Chloride mg/l	Sodium mg/l	Potassium mg/l	Calcium mg/l	Magnesium mg/l	Bicarbonate as CaCO3 mg/l	Sulfate mg/l	Nitrate (as N) mg/l	Total Kjeldahl Nitrogen mg/l	Boron mg/l	Fluoride mg/l	Iodide mg/l	Manganese mg/l	Bromide mg/l	Total Alkalinity as CaCO3 mg/l	Carbonate as CaCO3 mg/l	Hydroxide as CaCO3 mg/l	Specific Conductivity umhos/cm	Iron mg/l
32S/13E-30F03	10/19/2009	626	48	43.3	3.14	108	46.2	308	170	< 0.10	1.8	0.0646	0.22	< 0.10	0.255	0.17	308	< 1.0	< 1.0	910	2.09
32S/13E-30F03	8/19/2009	672	45	43.1	3.15	111	44.3	290	170	< 0.10	2.5	NA	0.14	< 0.10	0.468	0.19	290	< 1.0	< 1.0	980	18.5
32S/13E-30F03	5/12/2009	678	49	44.8	3.32	109	42.9	276	180	NA	NA	NA	0.17	NA	0.146	0.18	276	< 1.0	< 1.0	960	1.16
32S/13E-30F03	3/27/1996	686	41	40	3.4	109	48	379	197	0.0452	NA	0.13	NA	NA	NA	NA	NA	NA	NA	NA	NA
32S/13E-30F03	6/7/1976	616	43	41	2.6	96	49	333	190	0.0904	NA	0.05	0.5	NA	NA	NA	NA	NA	NA	NA	NA
32S/13E-30F03	1/19/1966	642	69	49	4	109	40	321	182	1	NA	0.05	0.3	NA	NA	NA	NA	NA	NA	NA	NA

Appendix A: NCMA Sentry Wells Water Quality Data



Well	Date	TDS mg/l	Chloride mg/l	Sodium mg/l	Potassium mg/l	Calcium mg/l	Magnesium mg/l	Bicarbonate as CaCO3 mg/l	Sulfate mg/l	Nitrate (as N) mg/l	Total Kjeldahl Nitrogen mg/l	Boron mg/l	Fluoride mg/l	Iodide mg/l	Manganese mg/l	Bromide mg/l	Total Alkalinity as CaCO3 mg/l	Carbonate as CaCO3 mg/l	Hydroxide as CaCO3 mg/l	Specific Conductivity umhos/cm	Iron mg/l
32S/13E-30N01	10/6/2021	720	120	94	24	64	48	240	200	0.1	0.43	0.2	0.37	0.026	0.082	1.6	240	8.2	8.2	1,160	1.5
32S/13E-30N01	4/7/2021	810	120	89	25	66	53	310	160	0.024	0.63	0.21	0.35	0.015	0.09900001	1.2	310	8.2	8.2		2.2
32S/13E-30N01	10/12/2020	870	120	97	28.0	82.0	60	330	160	0	0.68	0.21	0.370	0.020	0.11	1.20	330	0	0	1,260	2.7
32S/13E-30N01	4/21/2020	810	130	110	31.0	84.0	60	390	130	0	0.68	0.22	0.330	0.017	0.12	0.98	390	0	0	1,340	3.0
32S/13E-30N01	10/15/2019	830	150	110	32.0	86.0	57	330	170	0	0.66	0.22	0.320	0.018	0.12	1.30	330	0	0	1,340	2.6
32S/13E-30N01	4/9/2019	860	160	94	30	81	59	310	180	ND	0.64	0.23	0.36	0.012	0.11	1.2	310	ND	ND	1,370	2.8
32S/13E-30N01	10/10/2018	920	200	130	36	96	73	370	140	ND	0.62	0.21	0.36	0.017	0.14	0.85	370	ND	ND	1,500	3.0
32S/13E-30N01	4/11/2018	800	140	110	31	73	55	290	150	ND	0.73	0.2	0.36	0.017	0.1	1.1	290	ND	ND	1,280	2.4
32S/13E-30N01	10/11/2017	870	150	120	31	78	57	320	170	ND	0.68	0.24	0.38	0.019	0.12	1.5	320	ND	ND	1,350	3
32S/13E-30N01	4/11/2017	960	260	160	35	92	73	350	150	ND	0.84	0.23	0.42	0.015	0.14	1.5	350	ND	ND	1,690	3.9
32S/13E-30N01	10/12/2016	900	180	130	32	77	61	290	180	ND	0.53	0.19	0.34	0.021	0.11	1.7	290	ND	ND	1,420	2.7
32S/13E-30N01	4/12/2016	790	110	110	27	55	46	230	190	0.05	0.5	0.18	0.42	0.013	0.1	1.7	230	<8.2	<8.2	1,190	1.7
32S/13E-30N01	10/15/2015	740	120	100	27	52	41	250	190	<0.05	<1	0.18	0.43	0.032	0.072	1.3	250	<10	<10	1,220	1.8
32S/13E-30N01	4/14/2015	930	190	130	28	69	54	360	170	<0.05	1.4	0.23	0.334	0.01	0.087	1.2	360	<10	<10	1,500	2.5
32S/13E-30N01	1/14/2015	845	170	110	29.0	71	54	320	180	<0.05	<1	0.21	0.332	0.01	0.087	1.2	320	<10	<10	1,360	2.3
32S/13E-30N01	10/15/2014	790	140	110	30.0	62	53	300	160	0.68	<1	0.21	0.29	<0.01	0.084	1.2	300	<10	<10	1,350	2.5
32S/13E-30N01	7/30/2014	800	150	110	27.0	61	52	310	160	<0.05	<1	0.81	0.33	0.01	0.081	1.1	310	<10	<10	1,360	2.4
32S/13E-30N01	4/16/2014	850	160	112	26.0	55	43	310	170	<0.05	<1	0.20	0.33	0.01	0.077	1.3	310	<10	<10	1,410	2.4
32S/13E-30N01	1/15/2014	790	154	110	26.0	56	45	260	190	<0.05	<1	0.19	0.41	<0.01	0.077	1.4	260	<10	<10	1,340	2.5
32S/13E-30N01	10/15/2013	950	200	140	32.0	74	60	330	180	<0.05	<1	0.21	0.33	0.01	0.095	1.3	330	<10	<10	1,570	2.8
32S/13E-30N01	7/10/2013	830	175	120	29.0	71	54	310	185	<0.05	<1	0.22	0.32	0.01	0.087	0.84	310	<10	<10	1,430	2.3
32S/13E-30N01	4/10/2013	860	180	120	29.0	67	54	320	180	<0.05	1.1	0.21	0.31	0.01	0.087	1.2	320	<10	<10	1,470	2.5
32S/13E-30N01	1/14/2013	800	170	120	32.0	66	53	280	200	<0.05	1.1	0.22	0.26	<0.01	0.09	1.2	280	<10	<10	1,380	2.5
32S/13E-30N01	10/29/2012	900	180	120	34.0	77	60	300	190	<0.05	<1	0.21	0.40	0.011	0.098	1.2	300	<10	<10	1,500	2.8
32S/13E-30N01	7/23/2012	840	190	120	31.0	56	45	266	200	<0.05	<1	0.22	0.43	<0.01	0.096	1.2	266	<10	<10	1,370	2.3
32S/13E-30N01	4/18/2012	1,050	280	140	31.0	59	47	330	210	<0.1	1.4	0.2	0.50	<0.01	0.078	1.3	330	<10	<10	1,680	2.4
32S/13E-30N01	1/9/2012	1,050	260	170	34.0	68	52	307	200	<0.05	2.7	0.21	0.41	<0.01	0.088	1.9	307	<10	<10	1,760	2.9
32S/13E-30N01	11/17/2011	1,300	360	320	40	90	69	390	220	<0.1	<1	0.23	0.38	0.017	0.11	2.5	390	<10	<10	2,210	3.4
32S/13E-30N01	7/25/2011	1,680	445	230	42	99	81	380	255.5	<0.05	1.2	0.21	<0.1	<0.01	0.12	3.016	380	<5	<5	2,480	4.2
32S/13E-30N01	4/20/2011	890	210	130	26	68	46	180	215	<0.05	<1	0.24	0.39	0.013	0.086	4.57	180	<2.0	<2.0	1,550	NA
32S/13E-30N01	1/24/2011	870	180	100	28	84	46	240	210	<0.05	<1.0	<0.1	0.34	0.12	0.24	3.63	240	<2.0	<2.0	1,430	18
32S/13E-30N01	10/21/2010	890	190	120	26	58	45	246	200	<0.1	<1.0	<0.1	0.37	NA	0.078	2.3	246	<10	<10	1,498	<0.1
32S/13E-30N01	7/27/2010	917	200	130	30.0	75.0	56.2	241	220	< 0.10	< 0.50	0.165	0.29	0.23	0.101	2.8	241	< 1.0	< 1.0	1,400	2.61
32S/13E-30N01	4/27/2010	808	150	130	29	136	55.6	286	210	0.76	1.7	0.171	0.37	0.19	0.276	2.6	286	< 1.0	< 1.0	1,300	20.4
32S/13E-30N01	1/26/2010	902	210	155	33.5	156	66.4	307	230	< 0.10	1.7	0.317	0.30	0.12	0.333	3.2	307	< 1.0	< 1.0	1,500	27.3
32S/13E-30N01	10/20/2009	828	200	159	34.3	118	59.8	238	230	< 0.10	1.3	0.241	0.38	< 0.10	0.157	3.2	238	< 1.0	< 1.0	1,300	5.33
32S/13E-30N01	8/20/2009	835	160	150	27.8	121	49.4	235	220	< 0.10	1.3	NA	0.37	0.12	0.228	2.9	235	< 1.0	< 1.0	1,400	15.9
32S/13E-30N01	5/11/2009	960	180	175	33.5	86.7	46.2	274	220	NA	NA	NA	0.36	NA	0.113	3.2	274	< 1.0	< 1.0	1,500	2.26

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Well	Date	TDS mg/l	Chloride mg/l	Sodium mg/l	Potassium mg/l	Calcium mg/l	Magnesium mg/l	Bicarbonate as CaCO3 mg/l	Sulfate mg/l	Nitrate (as N) mg/l	Total Kjeldahl Nitrogen mg/l	Boron mg/l	Fluoride mg/l	Iodide mg/l	Manganese mg/l	Bromide mg/l	Total Alkalinity as CaCO3 mg/l	Carbonate as CaCO3 mg/l	Hydroxide as CaCO3 mg/l	Specific Conductivity umhos/cm	Iron mg/l
32S/13E-30N02	10/6/2021	930	51	70	3.9	140	58	190	490	0.18	0.2	0.16	0.12	0.011	0.01	0.14	190	8.2	8.2	1,340	0.05
32S/13E-30N02	7/15/2021	1,100	45	65	4.1	140	54	190	500	0.19	0.24	0.11	0.12	0.005	0.004	0.14	190	8.2	8.2	1,350	0.03
32S/13E-30N02	4/7/2021	1,000	43	70	4.4	140	57	200	490	0.19	0.13	0.14	0.13	0.005	0.004	0.14	200	8.2	8.2		0.03
32S/13E-30N02	1/7/2021	980	47	76	4.7	150	62	190	490	0.23	0.35	0.15	0.12	0.005	0.004	0.14	190	8.2	8.2	1,320	0.03
32S/13E-30N02	10/12/2020	1,100	50	73	4.7	150.0	61	190	510	0	0.00	0.15	0.110	0.000	0.00	0.13	190	0	0	1,350	0.0
32S/13E-30N02	7/7/2020	1,100	50	77	4.7	160.0	62	190	510	0	0.20	0.16	0.096	0.100	0.01	0.16	190	8	8	1,350	0.1
32S/13E-30N02	4/21/2020	1,000	49	71	4.5	150.0	56	190	500	0	0.22	0.15	0.120	0.000	0.00	0.13	190	0	0	1,370	0.1
32S/13E-30N02	1/15/2020	1,100	49	77	4.9	160.0	61	190	980	0	0.15	0.15	0.077	0.000	0.00	0.13	190	0	0	1,300	0.1
32S/13E-30N02	10/15/2019	1,000	49	77	4.8	160.0	58	190	510	0	0.10	0.16	0.088	0.000	0.00	0.17	190	0	0	1,350	0.2
32S/13E-30N02	7/9/2019	940	48	73	4.6	150.0	64	190	470	0	0.45	0.15	0.096	0.000	0.00	0.12	190	0	0	1,340	0.0
32S/13E-30N02	4/9/2019	1,000	50	64	4.6	140	56	190	480	0.2	0.14	0.15	0.12	ND	ND	0.14	190	ND	ND	1,350	0.04
32S/13E-30N02	1/9/2019	960	50	67	4.6	150	59	190	490	0.2	0.19	0.15	0.12	ND	ND	0.16	190	ND	ND	1,360	ND
32S/13E-30N02	10/10/2018	940	50	75	4.9	150	64	190	500	0.18	0.16	0.16	0.069	ND	ND	0.09	190	ND	ND	1,340	0.22
32S/13E-30N02	7/12/2018	1,000	47	66	4.5	140	59	190	480	0.19	0.19	0.14	0.099	ND	ND	0.12	190	ND	ND	1,390	0.17
32S/13E-30N02	4/11/2018	1,100	46	76	4.9	160	65	190	480	0.17	0.15	0.16	0.097	ND	0.007	0.14	190	ND	ND	1,350	0.41
32S/13E-30N02	1/11/2018	980	49	77	4.6	150	63	190	510	0.19	0.10	0.15	0.13	ND	ND	0.16	190	ND	ND	1,330	0.2
32S/13E-30N02	10/11/2017	1,000	46	70	4.8	160	65	200	510	0.19	0.19	0.17	0.11	ND	0.005	0.27	200	ND	ND	1340	0.28
32S/13E-30N02	7/11/2017	1,100	49	74	4.8	150	64	190	480	0.2	0.13	0.15	0.08	ND	0.023	0.16	190	ND	ND	1,360	2.0
32S/13E-30N02	4/11/2017	980	50	74	4.8	160	64	190	510	0.2	0.12	0.14	0.14	ND	ND	0.18	190	ND	ND	1,320	0.2
32S/13E-30N02	1/13/2017	980	49	80	5.1	170	69	200	490	0.19	0.12	0.16	0.078	ND	0.011	0.16	200	ND	ND	1,340	0.63
32S/13E-30N02	10/12/2016	1,000	50	77	5	160	69	200	500	0.18	ND	0.15	0.11	ND	ND	0.27	200	ND	ND	1370	ND
32S/13E-30N02	7/19/2016	1,000	48	78	5	160	68	200	500	0.2191	0.17	0.15	0.11	<0.010	<0.0040	0.2	200	<8.2	<8.2	1,350	<0.030
32S/13E-30N02	4/12/2016	1,000	44	72	4.8	150	67	190	470	0.2	<0.080	0.14	0.096	<0.010	<0.0040	0.21	190	<8.2	<8.2	1,390	<0.030
32S/13E-30N02	1/13/2016	990	48	74	4.9	150	64	190	520	0.27	0.12	0.14	0.22	<0.010	<0.0040	<0.046	190	<8.2	<8.2	1,300	0.041
32S/13E-30N02	10/15/2015	1,040	47	64	4.6	140	60	192	480	0.72	<1	0.13	0.18	<0.01	<0.005	<0.10	192	<10	<10	1,350	<0.05
32S/13E-30N02	7/16/2015	1,030	49	82	4.4	170	70	190	480	1.4	1.52	0.15	<0.1	<0.01	<0.005	0.11	190	<10	<10	1,360	<0.05
32S/13E-30N02	4/14/2015	840	47	61	4.3	130	58	190	500	0.576	<1	0.14	<0.3	<0.01	<0.005	<0.3	190	<10	<10	1,330	<0.05
32S/13E-30N02	1/14/2015	1,050	50	62	4.2	140	59	190	520	0.40	<1	0.13	0.115	<0.01	<0.005	<0.1	190	<10	<10	1,320	<0.05
32S/13E-30N02	10/15/2014	1,040	44	65	5.0	140	58	200	440	0.77	<1	0.13	<0.1	<0.01	<0.005	<0.1	200	<10	<10	1,370	<0.05
32S/13E-30N02	7/30/2014	1,020	45	66	4.6	140	60	220	470	0.51	<1	0.10	0.13	<0.01	<0.005	<0.4	220	<10	<10	1,340	<0.05
32S/13E-30N02	4/16/2014	1,040	46	66	5.0	120	50	190	520	0.47	<1	0.14	0.1	<0.01	<0.005	<0.1	190	<10	<10	1,350	<0.05
32S/13E-30N02	1/15/2014	1,060	45	60	4.1	120	49	190	477	0.65	1.1	0.13	0.43	<0.01	<0.005	<0.2	190	<10	<10	1,370	<0.05
32S/13E-30N02	10/15/2013	1,030	46	70	4.9	140	58	190	541	0.46	<1	0.12	0.18	<0.01	<0.005	<0.2	190	<10	<10	1,360	<0.05
32S/13E-30N02	7/10/2013	1,020	50	61	4.5	140	59	185	500	0.63	<1	0.14	0.12	<0.01	<0.005	<0.1	185	<10	<10	1,370	<0.05
32S/13E-30N02	4/10/2013	1,080	48	60	4.3	120	52	185	500	0.50	<1	0.15	<0.2	<0.01	<0.005	<0.2	185	<10	<10	1,360	<0.05
32S/13E-30N02	1/14/2013	1,010	48	63	4.5	120	53	188	530	0.40	<1	0.14	<0.2	<0.01	<0.005	<0.2	188	<10	<10	1,350	0.07
32S/13E-30N02	10/29/2012	1,030	40	68	5.0	140	58	180	500	<0.25	<1	0.14	<0.5	<0.01	<0.005	<0.5	180	<10	<10	1,360	<0.05
32S/13E-30N02	7/23/2012	1,040	54	63	4.5	110	48	188	510	0.13	<1	0.15	0.15	<0.01	0.01	<0.1	188	<10	<10	1,360	<0.05
32S/13E-30N02	4/18/2012	990	60	56	4.2	110	47	190	560	0.14	<1	0.12	0.21	<0.01	<0.005	0.28	190	<10	<10	1,360	<0.1
32S/13E-30N02	1/11/2012	1,040	49	64	4.9	130	54	180	460	1.30	<1	0.17	0.16	<0.02	<0.005	<0.2	180	<10	<10	1,360	<0.1
32S/13E-30N02	11/21/2011	1,020	46	57	4.5	130	54	180	450	0.15	<1	0.15	<0.2	<0.01	<0.005	<0.2	180	<10	<10	1,360	<0.1
32S/13E-30N02	7/25/2011	1,050	50	81	7.7	150	62	180	479.1	0.15	<1	0.16	0.144	<0.01	0.006	<0.1	180	<5	<5	1,370	0.49
32S/13E-30N02	4/20/2011	1,030	52	63	5.4	130	44	180	508	0.17	<1	0.19	0.2	<0.01	<0.005	<0.1	180	<2.0	<2.0	1,380	NA
32S/13E-30N02	1/24/2011	1,050	50	60	6.4	120	49	190	490	0.24	<1.0	0.17	0.17	<0.10	0.064	<0.1	190	<2.0	<2.0	1,380	0.12
32S/13E-30N02	10/21/2010	1,040	48	52	3.5	100	45	181	460	0.15	<1.0	<0.1	<0.1	NA	<0.005	<0.3	181	<10	<10	1,377	<0.1
32S/13E-30N02	7/27/2010	777	57	67.6	7.31	141	58.5	190	470	0.3	3.5	0.138	<0.10	0.11	0.102	0.28	190	<1.0	<1.0	1,300	3.43
32S/13E-30N02	4/27/2010	800	93	71.9	12.50	108	46.3	159	300	7.0	3.2	0.123	0.13	0.11	0.0776	0.7	159	<1.0	<1.0	1,100	3.27
32S/13E-30N02	2/25/2010	1,000	48	71.4	4.70	141	58.1	195	490	0.16	<0.50	0.15	0.15	<0.10	0.0393	0.16	195	<1.0	<1.0	1,300	3.30

Appendix A: NCMA Sentry Wells Water Quality Data



Well	Date	TDS mg/l	Chloride mg/l	Sodium mg/l	Potassium mg/l	Calcium mg/l	Magnesium mg/l	Bicarbonate as CaCO3 mg/l	Sulfate mg/l	Nitrate (as N) mg/l	Total Kjeldahl Nitrogen mg/l	Boron mg/l	Fluoride mg/l	Iodide mg/l	Manganese mg/l	Bromide mg/l	Total Alkalinity as CaCO3 mg/l	Carbonate as CaCO3 mg/l	Hydroxide as CaCO3 mg/l	Specific Conductivity umhos/cm	Iron mg/l
32S/13E-30N02	2/25/2010	1,010	74	76.9	10.2	138	55.8	195	440	0.13	2.4	0.142	0.16	< 0.10	0.0579	0.24	195	< 1.0	< 1.0	1,400	1.69
32S/13E-30N02	1/26/2010	970	50	74.2	4.77	152	62.2	195	510	0.14	< 0.50	0.129	0.11	< 0.10	< 0.00500	0.16	195	< 1.0	< 1.0	1,300	< 0.100
32S/13E-30N02	10/20/2009	2,080	690	274	151	239	101.0	220	400	< 0.10	7.0	0.201	0.16	0.87	0.398	2.0	220	< 1.0	< 1.0	2,800	5.50
32S/13E-30N02	8/20/2009	1,350	500	199	82.2	123	49.0	199	220	6.4	6.3	NA	0.23	0.14	0.339	2.8	199	< 1.0	< 1.0	2,100	4.91
32S/13E-30N02	5/11/2009	1,290	170	129	52	137	66.9	176	470	NA	NA	NA	0.18	NA	0.128	0.56	176	< 1.0	< 1.0	1,800	5.24
32S/13E-30N02	3/27/1996	1,050	50	71	5.5	145	60	243	516	0.2033	NA	0.23	NA	NA	NA	NA	NA	NA	NA	NA	NA
32S/13E-30N02	6/7/1976	1,093	48	62	4.7	150	60	248	484	0	NA	0.13	0.7	NA	NA	NA	NA	NA	NA	NA	NA
32S/13E-30N02	1/21/1966	1,069	54	71	5	148	63	232	483	0	NA	0.12	0.5	NA	NA	NA	NA	NA	NA	NA	NA

Appendix A: NCMA Sentry Wells Water Quality Data



Well	Date	TDS mg/l	Chloride mg/l	Sodium mg/l	Potassium mg/l	Calcium mg/l	Magnesium mg/l	Bicarbonate as CaCO3 mg/l	Sulfate mg/l	Nitrate (as N) mg/l	Total Kjeldahl Nitrogen mg/l	Boron mg/l	Fluoride mg/l	Iodide mg/l	Manganese mg/l	Bromide mg/l	Total Alkalinity as CaCO3 mg/l	Carbonate as CaCO3 mg/l	Hydroxide as CaCO3 mg/l	Specific Conductivity umhos/cm	Iron mg/l
32S/13E-30N03	10/6/2021	560	66	54	2.7	65	28	140	130	16	0.2	0.096	0.2	0.1	0.0079	0.7	140	4.1	4.1	818	0.05
32S/13E-30N03	7/15/2021	590	64	54	2.9	66	28	130	130	15	0.15	0.037	0.2	0.005	0.004	0.63	130	4.1	4.1	820	0.03
32S/13E-30N03	4/7/2021	510	66	56	3	65	30	140	130	15	0.12	0.078	0.18	0.005	0.004	0.76	140	4.1	4.1		0.03
32S/13E-30N03	1/7/2021	580	60	56	2.9	68	30	140	120	16	1.1	0.078	0.15	0.005	0.004	0.49	140	4.1	4.1	821	0.03
32S/13E-30N03	10/12/2020	600	66	58	3.2	74.0	32	140	140	16	0.13	0.09	0.180	0.000	0.00	0.75	140	0	0	848	0.0
32S/13E-30N03	7/7/2020	590	73	62	3.3	75.0	32	140	140	17	0.16	0.10	0.160	0.100	0.00	0.86	140	4	4	872	0.1
32S/13E-30N03	4/21/2020	590	69	57	3.2	71.0	30	140	140	16	0.17	0.08	0.220	0.000	0.09	0.77	140	0	0	882	0.1
32S/13E-30N03	1/15/2020	630	68	60	3.3	78.0	32	140	140	17	0.00	0.09	0.150	0.000	0.01	0.65	140	0	0	834	0.2
32S/13E-30N03	10/15/2019	560	67	60	3.2	76.0	31	150	140	17	0.14	0.09	0.170	0.000	0.11	0.86	150	0	0	875	0.2
32S/13E-30N03	7/9/2019	640	67	55	3.0	72.0	33	140	130	16	0.14	0.08	0.180	0.000	0.00	0.77	140	0	0	860	0.0
32S/13E-30N03	4/9/2019	580	71	51	3.1	68	30	150	130	16	0.18	0.09	0.2	ND	0.03	0.60	150	ND	ND	867	ND
32S/13E-30N03	1/9/2019	560	69	54	3.2	72	31	150	130	16	0.084	0.087	0.2	ND	ND	0.71	150	ND	ND	858	ND
32S/13E-30N03	10/10/2018	540	68	59	3.4	71	32	150	130	16	ND	0.091	0.21	ND	0.012	0.53	150	ND	ND	847	0.030
32S/13E-30N03	7/12/2018	550	62	54	3.2	69	31	150	120	15	0.16	0.084	0.17	ND	0.063	0.61	150	ND	ND	866	0.076
32S/13E-30N03	4/11/2018	590	62	58	3.3	72	33	150	120	14	0.19	0.094	0.16	ND	0.006	0.51	150	ND	ND	839	ND
32S/13E-30N03	1/11/2018	580	64	61	3.3	74	34	150	140	14	0.20	0.088	0.19	ND	0.33	0.61	150	ND	ND	836	0.12
32S/13E-30N03	10/11/2017	580	63	54	3.2	73	33	150	130	15	0.24	0.1	0.16	ND	0.86	0.64	150	ND	ND	836	0.59
32S/13E-30N03	7/11/2017	560	64	60	3.2	77	34	150	140	14	0.1	0.089	0.14	ND	0.54	0.66	150	ND	ND	871	0.18
32S/13E-30N03	4/11/2017	560	69	62	3.6	82	36	160	140	14	0.12	0.08	0.15	ND	0.62	0.69	160	ND	ND	866	0.43
32S/13E-30N03	1/12/2017	580	69	62	3.6	83	38	170	150	14	0.13	0.088	0.13	ND	3.3	0.74	170	ND	ND	878	1.5
32S/13E-30N03	10/12/2016	580	68	62	3.5	80	37	170	140	15	ND	0.088	0.16	ND	0.56	0.76	170	ND	ND	879	0.17
32S/13E-30N03	7/19/2016	580	66	61	3.6	75	36	160	130	14.683	0.20	0.084	0.16	<0.010	0.030	0.76	160	<4.1	<4.1	864	<0.030
32S/13E-30N03	4/12/2016	610	69	60	3.4	75	36	160	130	14.457	0.16	0.078	0.18	<0.010	0.0095	0.78	160	<4.1	<4.1	895	<0.05
32S/13E-30N03	1/13/2016	570	72	62	3.4	77	35	160	140	15	0.15	0.083	0.22	<0.010	0.0089	0.66	160	<4.1	<4.1	867	0.079
32S/13E-30N03	10/15/2015	570	63	54	3.3	69	32	162	130	15	<1	0.0161	0.23	<0.01	0.015	0.56	162	<10	<10	860	<0.05
32S/13E-30N03	7/16/2015	580	65	65	3.0	81	35	160	140	15	15.3	0.079	0.14	0.45	0.011	0.46	160	<10	<10	880	<0.05
32S/13E-30N03	4/14/2015	580	65	49	2.9	65	31	160	140	15.2	<1	0.078	<0.1	<0.01	<0.005	0.47	160	<10	<10	860	<0.05
32S/13E-30N03	1/14/2015	610	68	53	3.0	73	34	170	150	15	<1	0.074	0.151	<0.01	0.0540	0.43	170	<10	<10	870	0.49
32S/13E-30N03	10/15/2014	560	59	52	3.5	67	32	160	130	14	0.54	0.066	0.14	<0.01	<0.005	0.452	160	<10	<10	890	<0.05
32S/13E-30N03	7/30/2014	580	65	55	3.2	69	32	170	130	15	<1	<0.1	0.16	<0.01	<0.005	0.34	170	<10	<10	910	<0.05
32S/13E-30N03	4/16/2014	610	63	55	4.3	65	29	170	140	13.00	<1	0.08	0.15	<0.01	0.058	0.38	170	<10	<10	910	<0.05
32S/13E-30N03	1/15/2014	610	66	54	3.2	67	31	170	149	14.8	15	<0.1	0.16	<0.01	0.065	0.46	170	<10	<10	910	0.27
32S/13E-30N03	10/15/2013	580	60	57	3.3	71	32	170	150	14	<1	0.057	0.16	<0.01	0.370	0.41	170	<10	<10	910	0.1
32S/13E-30N03	7/10/2013	590	60	48	3.1	71	31	160	150	15.1	<1	0.074	0.18	<0.01	1.3	0.17	160	<10	<10	900	0.43
32S/13E-30N03	4/10/2013	600	66	53	3.3	69	31	160	150	15	<1	0.11	0.2	<0.01	0.064	0.35	160	<10	<10	910	<0.05
32S/13E-30N03	1/14/2013	570	66	55	3.4	68	30	165	150	15	<1	0.093	0.2	<0.01	0.028	0.27	165	<10	<10	900	0.084
32S/13E-30N03	10/29/2012	610	60	56	3.7	74	33	155	148	14	<1	0.081	0.2	<0.01	0.027	0.3	155	<10	<10	900	0.04
32S/13E-30N03	7/23/2012	600	71	56	3.5	61	28	152	200	<0.05	<1	0.1	<0.1	<0.002	0.120	0.3	152	<10	<10	890	0.44
32S/13E-30N03	4/18/2012	570	80	47	3.0	57	25	150	150	16	<1	0.1	0.3	<0.01	<0.005	0.28	150	<10	<10	880	<0.1
32S/13E-30N03	1/11/2012	570	67	55	3.9	68	30	140	130	14	<1	0.1	0.2	<0.02	0.0510	0.39	140	<10	<10	870	0.17
32S/13E-30N03	11/21/2011	600	67	47	3.2	64	28	140	130	15	1.2	0.088	0.2	<0.01	<0.005	0.62	140	<10	<10	850	<0.1
32S/13E-30N03	7/25/2011	590	67	47	5.0	54	24	290	139.8	15	<1	<0.1	0.2	<0.01	0.0520	0.79	290	<5	<5	890	0.14
32S/13E-30N03	4/20/2011	580	76	58	4.2	62	23	140	142	16	<1	0.12	0.2	<0.1	0.0510	0.92	140	<2.0	<2.0	890	NA
32S/13E-30N03	1/24/2011	570	76	48	4.8	55	25	130	130	16	<1.0	0.12	0.2	<0.10	0.0088	1.7	130	<2.0	<2.0	900	<0.1
32S/13E-30N03	10/21/2010	550	69	59	3.3	65	31	133	130	15	<1.0	<0.1	0.1	NA	<0.005	1.1	133	<10	<10	886	<0.1
32S/13E-30N03	7/27/2010	528	72	55.1	3.41	68.7	31.0	139	130	15.0	< 0.50	0.0672	0.14	0.11	< 0.00500	1.3	139	< 1.0	< 1.0	860	< 0.100
32S/13E-30N03	4/27/2010	672	89	60.6	3.65	70.6	32.5	134	130	14.0	< 0.50	0.0779	0.18	0.11	< 0.00500	1.2	134	< 1.0	< 1.0	870	< 0.100
32S/13E-30N03	1/26/2010	606	110	75.0	4.51	77.8	34.3	126	130	14	1.4	0.0654	0.15	< 0.10	0.0130	1.3	126	< 1.0	< 1.0	990	0.653



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32S/13E-30N03	10/20/2009	806	180	93.3	25.5	92.3	41.5	162	150	9.7	2.2	0.107	0.26	< 0.10	0.245	1.4	162	< 1.0	< 1.0	1,200	0.344
32S/13E-30N03	8/20/2009	1,070	190	151	61.6	112	44.2	130	130	16	3.4	NA	0.20	< 0.10	0.151	1.6	130	< 1.0	< 1.0	1,700	1.93
32S/13E-30N03	5/12/2009	602	97	63.4	3.96	72.9	32.2	122	120	NA	NA	NA	0.22	NA	24	1.2	122	< 1.0	< 1.0	900	2.24
32S/13E-30N03	3/27/1996	624	70	62	4	78	35	150	161	24.126	NA	0.13	NA	NA	NA	NA	NA	NA	NA	NA	NA
32S/13E-30N03	6/7/1976	705	90	54	2.9	99	43	189	168	25.413	NA	0.08	0.5	NA	NA	NA	NA	NA	NA	NA	NA
32S/13E-30N03	1/21/1966	804	57	54	3	132	59	410	250	1	NA	0.08	0.5	NA	NA	NA	NA	NA	NA	NA	NA

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Well	Date	TDS mg/l	Chloride mg/l	Sodium mg/l	Potassium mg/l	Calcium mg/l	Magnesium mg/l	Bicarbonate as CaCO3 mg/l	Sulfate mg/l	Nitrate (as N) mg/l	Total Kjeldahl Nitrogen mg/l	Boron mg/l	Fluoride mg/l	Iodide mg/l	Manganese mg/l	Bromide mg/l	Total Alkalinity as CaCO3 mg/l	Carbonate as CaCO3 mg/l	Hydroxide as CaCO3 mg/l	Specific Conductivity umhos/cm	Iron mg/l
32S/13E-31H10	10/5/2021	630	34	36	2.7	110	52	360	160	0.1	0.21	0.067	0.21	0.0083	0.12	0.12	360	8.2	8.2	1,020	4.5
32S/13E-31H10	7/14/2021	580	34	37	2.7	110	52	360	160	0.048	0.4	0.055	0.19	0.0086	0.15	0.13	360	8.2	8.2	1,020	5.6
32S/13E-31H10	4/6/2021	480	36	41	3.1	31	52	250	93	0.024	0.17	0.062	0.055	0.011	0.18	0.16	250	4.1	4.1		2
32S/13E-31H10	1/6/2021	380	37	51	7.2	13	47	210	61	0.024	0.48	0.082	0.048	0.016	0.1	0.16	220	11	4.1	614	1.3
32S/13E-31H10	10/7/2020	660	33	35	2.6	97.0	47	350	150	0	0.23	0.08	0.180	0.008	0.14	0.12	350	0	0	965	4.8
32S/13E-31H10	7/7/2020	510	42	51	5.0	27.0	48	220	99	0	0.10	0.08	0.052	0.022	0.17	0.20	220	4	4	720	1.9
32S/13E-31H10	4/21/2020	430	38	50	5.3	21.0	44	220	73	0	0.28	0.07	0.055	0.020	0.13	0.14	220	0	0	669	1.9
32S/13E-31H10	1/14/2020	520	36	42	3.7	80.0	51	310	130	0	0.11	0.08	0.160	0.014	0.20	0.09	310	0	0	843	4.4
32S/13E-31H10	10/14/2019	630	34	42	3.9	110.0	52	350	150	0	0.00	0.08	0.140	0.000	0.20	0.00	350	0	0	974	6.6
32S/13E-31H10	7/9/2019	650	44	50	3.4	110.0	57	320	200	0	0.24	0.09	0.180	0.026	0.21	0.19	320	0	0	1,030	6.0
32S/13E-31H10	4/9/2019	630	43	48	3.4	100	50	320	200	ND	0.17	0.099	0.21	0.015	0.18	0.15	320	ND	ND	1,040	4.8
32S/13E-31H10	1/8/2019	620	35	41	3.3	100	54	340	160	ND	0.17	0.081	0.18	0.012	0.16	0.14	340	ND	ND	973	5.6
32S/13E-31H10	10/9/2018	590	33	45	5.3	88	54	330	120	ND	0.20	0.075	0.11	0.011	0.16	0.08	330	ND	ND	916	6.5
32S/13E-31H10	7/12/2018	510	34	46	6.0	45	54	300	96	ND	0.23	0.080	0.12	0.012	0.12	0.16	300	ND	ND	846	3.8
32S/13E-31H10	4/10/2018	690	41	51	3.5	120	55	310	200	ND	0.16	0.089	0.19	0.016	0.21	0.15	310	ND	ND	1,020	4.7
32S/13E-31H10	1/10/2018	660	35	44	3.3	110	56	350	170	ND	0.23	0.075	0.20	0.016	0.2	0.17	350	ND	ND	1,020	5.3
32S/13E-31H10	10/11/2017	640	33	41	3.1	120	57	360	160	ND	0.38	0.083	0.18	ND	0.21	0.13	450	89	ND	1070	4.3
32S/13E-31H10	7/11/2017	720	36	48	3.8	120	60	350	170	ND	0.17	0.09	0.15	0.011	0.17	0.13	350	ND	ND	1,020	4.7
32S/13E-31H10	4/12/2017	600	39	47	3.4	120	62	340	190	ND	ND	0.09	0.19	0.013	0.19	0.22	340	ND	ND	1,020	5.2
32S/13E-31H10	1/13/2017	670	34	45	3.4	130	60	370	180	ND	0.16	0.076	0.17	0.014	0.22	0.1	370	ND	ND	1,020	7.8
32S/13E-31H10	10/12/2016	700	33	40	3.2	120	59	380	170	ND	0.22	0.062	0.18	0.012	0.15	0.12	380	ND	ND	1040	5.3
32S/13E-31H10	7/20/2016	630	33	42	4.4	99	57	370	150	<0.022	0.3	0.068	0.14	<0.01	0.19	0.14	370	<8.2	<8.2	991	8.9
32S/13E-31H10	4/13/2016	670	37	46	3.4	120	57	350	180	<0.022	0.21	0.078	0.19	0.011	0.23	0.14	350	<8.2	<8.2	1,030	6.7
32S/13E-31H10	1/13/2016	380	37	49	9.9	6.8	46	170	54	<0.022	0.43	0.044	0.088	0.014	0.084	0.19	210	34	<4.1	603	2.2
32S/13E-31H10	10/14/2015	320	32	33	2.7	17	48	216	68	<0.05	<1	0.089	0.12	0.016	0.098	<0.10	227	11	<10	600	1.4
32S/13E-31H10	7/15/2015	330	34	44	3.4	15	54	195	81	<0.05	<1	0.082	<0.1	<0.01	0.081	<0.1	213	18	<10	610	0.98
32S/13E-31H10	4/16/2015	660	35	33	2.7	99	48	360	170	<0.05	<1	0.083	0.163	<0.01	0.17	<0.1	360	<10	<10	1,000	4.6
32S/13E-31H10	1/14/2015	760	55	56	3.0	110	50	300	250	<0.05	<1	0.11	0.159	0.021	0.17	<0.1	300	<10	<10	1,070	4.2
32S/13E-31H10	10/16/2014	720	41	46	3.7	110	53	330	200	<0.05	<1	0.10	<0.1	<0.01	0.17	<0.1	330	<10	<10	1,090	6.5
32S/13E-31H10	7/30/2014	660	34	35	2.4	95	49	420	160	<0.05	<1	<0.1	0.16	<0.01	0.17	<0.1	420	<10	<10	1,040	6.5
32S/13E-31H10	4/17/2014	890	55	70	5.4	100	45	250	380	<0.05	<1	0.15	0.12	0.01	0.31	0.13	250	<10	<10	1,260	4.9
32S/13E-31H10	1/16/2014	900	57	66	4.60	110	50	240	360	<0.05	<1	0.180	0.2	0.02	0.32	<0.1	240	<10	<10	1,260	6.0
32S/13E-31H10	10/16/2013	690	30	40	3.40	100	49	340	190	<0.05	<1	0.091	0.14	<0.01	0.23	<0.1	340	<10	<10	1,050	7.4
32S/13E-31H10	7/11/2013	860	60	50	4.40	110	47	240	340	<0.05	<1	0.18	0.15	0.02	0.28	<0.1	240	<10	<10	1,230	4.9
32S/13E-31H10	4/11/2013	900	60	69	4.60	110	47	250	350	0.82	<1	0.2	0.12	0.03	0.28	<0.2	250	<10	<10	1,250	5.7
32S/13E-31H10	1/16/2013	820	66	76	5.00	100	47	260	320	<0.1	<1	0.21	0.13	<0.01	0.31	<0.2	260	<10	<10	1,230	4.2
32S/13E-31H10	10/30/2012	780	65	75	4.70	100	46	255	280	<0.05	<1	0.19	0.14	0.04	0.23	<0.1	255	<10	<10	1,190	4
32S/13E-31H10	7/25/2012	830	76	80	5.30	96	45	250	310	<0.05	<1	0.22	0.15	0.04	0.24	<0.1	250	<10	<10	1,220	6.7
32S/13E-31H10	4/19/2012	790	87	69	4.50	52	37	250	270	<0.1	<1	0.19	0.21	0.05	0.17	<0.2	250	<10	<10	1,180	4
32S/13E-31H10	1/12/2012	760	76	85	4.00	79	40	270	190	<0.1	<1	0.23	0.21	0.069	0.23	<0.2	270	<10	<10	1,150	4.8
32S/13E-31H10	11/21/2011	720	39	38	3.40	96	43	320	180	<0.05	3.5	0.079	0.19	0.013	0.17	<0.1	320	<10	<10	1,050	4.8
32S/13E-31H10	7/25/2011	760	69	66	6.40	80	35	310	208.8	<0.05	<1	0.16	0.17	0.041	0.23	0.199	310	<5	<5	1,170	5.3
32S/13E-31H10	1/24/2011	310	98	22	8.1	34	9.2	19.0	53	<0.05	<1.0	<0.1	0.2	4.42	0.4	0.63	19.0	<2.0	<2.0	480	10
32S/13E-31H10	10/28/2010	290	81	26	9.3	64	11	160.0	68	<0.1	<1.0	<0.1	0.2	NA	0.85	0.36	160.0	<10	<10	520	38
32S/13E-31H10	7/26/2010	438	85	34.3	1.93	61.7	30.4	30.0	210	< 0.10	< 0.50	0.0435	0.58	0.22	1.46	0.32	30.0	< 1.0	< 1.0	690	36
32S/13E-31H10	4/26/2010	560	83	47.7	5.7	86.1	48.3	62	310	< 0.10	0.84	< 0.02	< 0.1	0.56	2.54	0.31	62.0	< 1.0	< 1.0	880	233
32S/13E-31H10	1/27/2010	460	130	45.0	25.4	682	124	112	100	0.56	NA	< 0.0200	0.21	0.25	32.4	0.49	112.0	< 1.0	< 1.0	760	4,360
32S/13E-31H10	10/20/2009	362	92	39.6	2.92	19.2	45.1	76.8	110	< 0.10	< 0.50	0.0697	< 0.10	< 0.10	0.242	0.39	80.0	3.2	< 1.0	590	11.4

Appendix A: NCMA Sentry Wells Water Quality Data



Well	Date	TDS mg/l	Chloride mg/l	Sodium mg/l	Potassium mg/l	Calcium mg/l	Magnesium mg/l	Bicarbonate as CaCO3 mg/l	Sulfate mg/l	Nitrate (as N) mg/l	Total Kjeldahl Nitrogen mg/l	Boron mg/l	Fluoride mg/l	Iodide mg/l	Manganese mg/l	Bromide mg/l	Total Alkalinity as CaCO3 mg/l	Carbonate as CaCO3 mg/l	Hydroxide as CaCO3 mg/l	Specific Conductivity umhos/cm	Iron mg/l
32S/13E-31H10	8/19/2009	420	160	48.4	3.37	49.9	20.4	17.6	54	< 0.10	1.1	NA	< 0.10	0.25	1.76	0.68	17.6	< 1.0	< 1.0	690	242
32S/13E-31H10	5/16/1983	665	35	40	NA	85	65	360	90	< 4	NA	NA	0.2	NA	0.01	NA	360	ND	ND	950	0.10

Appendix A: NCMA Sentry Wells Water Quality Data



Well	Date	TDS mg/l	Chloride mg/l	Sodium mg/l	Potassium mg/l	Calcium mg/l	Magnesium mg/l	Bicarbonate as CaCO3 mg/l	Sulfate mg/l	Nitrate (as N) mg/l	Total Kjeldahl Nitrogen mg/l	Boron mg/l	Fluoride mg/l	Iodide mg/l	Manganese mg/l	Bromide mg/l	Total Alkalinity as CaCO3 mg/l	Carbonate as CaCO3 mg/l	Hydroxide as CaCO3 mg/l	Specific Conductivity umhos/cm	Iron mg/l
32S/13E-31H11	10/5/2021	680	37	44	3.3	120	53	340	200	0.1	0.2	0.08	0.19	0.0089	0.23	0.12	340	8.2	8.2	1,060	5.1
32S/13E-31H11	7/14/2021	640	37	41	3	110	50	350	210	0.024	0.13	0.06	0.19	0.012	0.22	0.15	350	8.2	8.2	1,070	4.8
32S/13E-31H11	4/6/2021	680	37	42	3	110	49	340	210	0.024	0.15	0.072	0.2	0.011	0.2	0.15	340	8.2	8.2		4.6
32S/13E-31H11	1/6/2021	620	38	47	3.5	120	55	340	210	0.024	0.49	0.087	0.2	0.015	0.22	0.18	340	8.2	8.2	1,050	4.9
32S/13E-31H11	10/7/2020	680	37	41	3.6	110.0	55	330	200	0	0.13	0.09	0.210	0.000	0.22	0.12	330	0	0	1,020	11.0
32S/13E-31H11	7/7/2020	410	62	69	5.2	3.1	41	140	57	0	0.20	0.11	0.056	0.051	0.02	0.32	170	36	4	636	0.9
32S/13E-31H11	4/21/2020	450	60	59	4.4	5.1	45	170	85	0	0.21	0.10	0.068	0.054	0.04	0.26	180	14	0	698	0.7
32S/13E-31H11	1/14/2020	680	73	76	3.6	110.0	44	300	210	0	0.11	0.17	0.200	0.075	0.18	0.26	300	0	0	1,070	3.8
32S/13E-31H11	10/14/2019	750	48	56	3.7	120.0	50	320	200	0	0.00	0.11	0.160	0.027	0.24	0.15	320	0	0	1,070	5.7
32S/13E-31H11	7/9/2019	650	61	73	4.0	110.0	52	310	210	0	0.17	0.16	0.170	0.054	0.24	0.28	310	0	0	1,110	5.9
32S/13E-31H11	4/9/2019	700	61	66	3.7	110	48	300	240	ND	0.18	0.140	0.20	0.041	0.19	0.27	300	ND	ND	1,140	3.7
32S/13E-31H11	1/8/2019	730	39	45	3.6	120	52	340	220	ND	0.14	0.087	0.18	0.016	0.24	0.13	340	ND	ND	1090	8.2
32S/13E-31H11	10/9/2018	720	37	49	3.8	130	59	340	210	ND	0.24	0.091	0.15	0.015	0.23	0.08	340	ND	ND	1,090	8.2
32S/13E-31H11	7/12/2018	720	36	43	3.6	120	54	340	190	ND	0.27	0.082	0.17	0.014	0.25	0.15	340	ND	ND	1,110	7.2
32S/13E-31H11	4/10/2018	780	73	81	3.8	110	47	300	210	ND	0.090	0.17	0.18	0.066	0.24	0.40	300	ND	ND	1,130	7.3
32S/13E-31H11	1/10/2018	750	39	51	3.7	130	57	340	220	ND	0.17	0.089	0.20	0.021	0.28	0.16	340	ND	ND	1,090	5.9
32S/13E-31H11	10/11/2017	720	38	45	3.7	120	56	350	200	ND	0.22	0.13	0.18	0.015	0.22	0.14	350	ND	ND	1080	5.6
32S/13E-31H11	7/11/2017	820	43	53	3.9	130	58	320	230	ND	0.11	0.11	0.13	0.018	0.29	0.19	320	ND	ND	1,100	9.7
32S/13E-31H11	4/12/2017	720	45	53	3.8	120	56	320	250	ND	ND	0.11	0.17	0.022	0.25	0.18	320	ND	ND	1,100	6.3
32S/13E-31H11	1/13/2017	750	44	57	4	130	58	340	240	ND	0.11	0.11	0.13	0.024	0.29	0.15	340	ND	ND	1,100	7.20
32S/13E-31H11	10/12/2016	780	41	49	3.9	120	57	350	220	ND	0.12	0.097	0.16	0.021	0.28	0.16	350	ND	ND	1100	8.10
32S/13E-31H11	7/20/2016	420	120	64	6.8	4.3	38	60	39	<0.022	0.097	0.12	0.059	0.084	0.084	0.59	89	29	<4.1	617	9.0
32S/13E-31H11	4/13/2016	410	110	64	604	3.9	40	51	56	<0.022	<0.080	0.11	0.058	0.084	0.053	0.58	92	41	<4.1	628	6.7
32S/13E-31H11	1/13/2016	450	120	70	7.7	4.5	36	49	65	<0.022	<0.080	0.11	0.095	0.11	0.072	0.76	86	37	<4.1	675	8.6
32S/13E-31H11	10/14/2015	350	110	69	9.2	3.7	31	42	74	<0.05	<1	0.16	<0.10	0.099	0.036	0.44	75	33	<10	670	5.7
32S/13E-31H11	7/15/2015	380	120	85	11.0	4.3	35	40	85	<0.05	<1	0.19	<0.1	0.1	0.05	0.409	65	25	<10	690	9.6
32S/13E-31H11	4/16/2015	400	120	66	7.6	4.9	36	54	100	<0.05	<1	0.17	<0.1	0.088	0.039	0.481	76	22	<10	700	6.6
32S/13E-31H11	1/14/2015	420	125	68	7.0	6.4	37	45	126	<0.05	<1	0.15	<0.1	0.097	0.038	0.39	65	20	<10	720	3.5
32S/13E-31H11	10/16/2014	370	120	78	13.0	4.2	29	53	77	<0.05	<1	0.17	<0.1	0.11	0.040	0.35	88	<10	<10	740	4.5
32S/13E-31H11	7/30/2014	450	120	71	4.4	9.6	43	53	130	0.13	<1	0.15	0.12	0.1	0.078	0.29	73	20	<10	800	8
32S/13E-31H11	4/17/2014	370	120	89	14.0	2.4	17	76	39	<0.05	<1	0.16	<0.1	0.12	0.03	0.43	121	45	<10	720	3.7
32S/13E-31H11	1/16/2014	350	122	89	15	2	18	68	42	<0.05	<1	0.17	0.1	0.09	0.026	0.48	125	57.5	<10	710	2.3
32S/13E-31H11	10/16/2013	360	100	98	20	3.1	15	66	36	<0.05	<1	0.19	<0.1	0.11	0.057	0.38	139	73	<10	710	4.1
32S/13E-31H11	7/11/2013	370	140	70	6.3	4	23	82	40	0.4	<1	0.2	0.11	0.11	0.043	0.44	117	35	<10	730	3.2
32S/13E-31H11	4/11/2013	340	90	81	14	2.9	18	78	30	<0.05	<1	0.19	0.12	0.07	0.046	0.3	155	77.5	<10	650	3.2
32S/13E-31H11	1/16/2013	360	107	99	7.1	3.3	24	110	36	<0.05	<1	0.25	<0.1	<0.01	0.048	0.4	165	55	<10	720	3.7
32S/13E-31H11	10/30/2012	380	97	100	6.4	4.5	24	130	38	<0.05	<1	0.28	<0.1	0.1	0.09	0.2	168	38	<10	720	6.1
32S/13E-31H11	7/25/2012	240	49	56	11	5.4	22	99	43	<0.05	<1	0.16	0.19	0.023	0.11	<0.1	132	33	<10	470	6.6
32S/13E-31H11	4/19/2012	380	100	87	5.5	3.5	26	150	79	<0.1	<1	0.27	0.26	0.09	0.033	0.68	180	30	<10	750	1.6
32S/13E-31H11	1/12/2012	480	96	110	4.9	5.6	33	154	95	<0.1	<1	0.28	<0.2	0.11	0.01	0.306	180	26	<10	850	0.2
32S/13E-31H11	11/21/2011	390	90	78	4.6	5.2	24	111	86	<0.05	<1	0.19	0.13	0.092	0.014	0.28	128	17	<10	720	0.5
32S/13E-31H11	7/25/2011	260	29	23	5.3	8.7	20	84	80	<0.05	<1	<0.1	0.199	0.072	0.041	<0.1	89	<5	<5	440	2.7
32S/13E-31H11	4/21/2011	580	118	70	19	49	17	8.8	274	<0.05	<1	<0.1	0.29	0.109	0.091	0.4	11.3	2.5	<2.0	950	NA
32S/13E-31H11	1/24/2011	680	110	60	17	64	22	5.0	330	<0.05	<1.0	<0.1	0.22	0.96	0.16	0.31	11.2	6.2	<2.0	1,040	10.0
32S/13E-31H11	10/21/2010	770	100	68	12	88	31	14.0	380	<0.1	<1.0	<0.1	0.28	NA	0.054	<0.3	14.0	<10	<10	1,163	2.2
32S/13E-31H11	7/26/2010	783	130	80.1	8.58	142	42.0	2.8	450	< 0.10	< 0.50	< 0.0200	0.26	0.31	3.97	0.8	2.8	< 1.0	< 1.0	1,200	593
32S/13E-31H11	4/26/2010	1,130	160	70.2	6.48	208	50.7	8.4	530	< 0.10	0.56	< 0.02	0.23	0.54	3.10	1.0	8.4	< 1.0	< 1.0	1,600	383
32S/13E-31H11	1/27/2010	1,740	430	55.6	4.98	282	43.0	< 1.0	680	< 0.10	< 0.50	0.0819	0.14	0.41	9.41	2.0	< 1.0	< 1.0	< 1.0	2,300	170

Appendix A: NCMA Sentry Wells Water Quality Data



Well	Date	TDS mg/l	Chloride mg/l	Sodium mg/l	Potassium mg/l	Calcium mg/l	Magnesium mg/l	Bicarbonate as CaCO3 mg/l	Sulfate mg/l	Nitrate (as N) mg/l	Total Kjeldahl Nitrogen mg/l	Boron mg/l	Fluoride mg/l	Iodide mg/l	Manganese mg/l	Bromide mg/l	Total Alkalinity as CaCO3 mg/l	Carbonate as CaCO3 mg/l	Hydroxide as CaCO3 mg/l	Specific Conductivity umhos/cm	Iron mg/l
32S/13E-31H11	10/20/2009	2,250	1,000	19.5	2.40	487	22.5	5.0	410	< 0.10	0.98	0.0532	0.13	< 0.10	13.1	4.5	5.0	< 1.0	< 1.0	3,100	236
32S/13E-31H11	8/19/2009	322	150	93.2	16.7	23.9	12.1	3.0	4.0	< 0.10	1.3	NA	0.19	0.5	0.7	0.74	23.0	20.0	< 1.0	640	153
32S/13E-31H11	5/16/1983	840	80	90	NA	100	50	250	160.0	< 4	NA	ND	0.2	NA	0.14	NA	250.0	ND	ND	1,200	0.10

Appendix A: NCMA Sentry Wells Water Quality Data



Well	Date	TDS mg/l	Chloride mg/l	Sodium mg/l	Potassium mg/l	Calcium mg/l	Magnesium mg/l	Bicarbonate as CaCO3 mg/l	Sulfate mg/l	Nitrate (as N) mg/l	Total Kjeldahl Nitrogen mg/l	Boron mg/l	Fluoride mg/l	Iodide mg/l	Manganese mg/l	Bromide mg/l	Total Alkalinity as CaCO3 mg/l	Carbonate as CaCO3 mg/l	Hydroxide as CaCO3 mg/l	Specific Conductivity umhos/cm	Iron mg/l
32S/13E-31H12	4/21/2011	410	97	100	7.2	3.5	21	80	134	<0.05	<1	0.23	0.18	0.097	0.065	0.42	100	20	<2.0	770	NA
32S/13E-31H12	1/24/2011	440	92	90	9.2	3.4	27	90	140	<0.05	<1.0	0.25	0.11	0.94	0.041	0.35	110	20	<2.0	810	2.2
32S/13E-31H12	10/21/2010	460	90	110	15	6.8	32	94	140	<0.1	<1.0	0.2	0.1	NA	0.1	0.38	124	30	<10	868	3.5
32S/13E-31H12	7/26/2010	478	83	109	5.94	52.9	30.4	122.0	94	< 0.10	<0.50	0.255	< 0.10	0.41	0.477	0.56	130.0	8.0	< 1.0	730	61.0
32S/13E-31H12	4/26/2010	452	83	83	7.42	29.3	34.5	72.0	190	< 0.1	0.56	0.134	< 0.10	0.65	0.702	0.4	86.0	14.0	< 1.0	810	71.0
32S/13E-31H12	1/27/2010	496	71	92.2	10.6	22.9	39.1	13.0	230	<0.10	< 0.50	0.323	< 0.10	0.20	0.604	0.29	51.0	38.0	< 1.0	780	54.4
32S/13E-31H12	10/20/2009	564	71	80.8	8.63	33.2	49.8	49.6	310	<0.10	< 0.50	0.148	< 0.10	< 0.10	0.337	0.32	64.0	14.4	< 1.0	850	20.0
32S/13E-31H12	8/19/2009	522	180	148	71.6	95.2	8.42	30.0	3.5	<0.10	1.7	NA	0.24	0.52	2.36	0.76	170	140	< 1.0	1,000	278
32S/13E-31H12	5/16/1983	630	40	40	NA	90	50	330	80	< 4	NA	NA	0.1	NA	0.02	NA	330	ND	ND	900	0.05



Appendix A: NCMA Sentry Wells Water Quality Data



Well	Date	TDS mg/l	Chloride mg/l	Sodium mg/l	Potassium mg/l	Calcium mg/l	Magnesium mg/l	Bicarbonate as CaCO3 mg/l	Sulfate mg/l	Nitrate (as N) mg/l	Total Kjeldahl Nitrogen mg/l	Boron mg/l	Fluoride mg/l	Iodide mg/l	Manganese mg/l	Bromide mg/l	Total Alkalinity as CaCO3 mg/l	Carbonate as CaCO3 mg/l	Hydroxide as CaCO3 mg/l	Specific Conductivity umhos/cm	Iron mg/l
32S/13E-31H13	10/5/2021	500	100	83	3.8	11	43	200	41	0.1	0.11	0.17	0.067	0.051	0.22	0.33	210	8.4	4.1	772	0.5
32S/13E-31H13	7/14/2021	490	99	85	3.6	13	35	210	29	0.024	0.088	0.16	0.059	0.049	0.13	0.34	220	9	4.1	760	0.76
32S/13E-31H13	4/6/2021	430	110	97	4.2	2.9	28	170	0.52	0.024	0.088	0.19	0.066	0.056	0.061	0.36	210	38	4.1		0.16
32S/13E-31H13	1/6/2021	480	110	98	4.4	3	28	170	0.48	0.024	0.3	0.21	0.054	0.063	0.063	0.35	210	33	4.1	678	0.18
32S/13E-31H13	10/7/2020	530	100	98	4.3	3.8	31	180	0	0	0.00	0.22	0.063	0.059	0.07	0.32	210	32	0	685	0.9
32S/13E-31H13	7/7/2020	500	110	100	4.4	3.2	29	180	2	0	0.20	0.21	0.054	0.069	0.05	0.35	200	25	4	729	0.2
32S/13E-31H13	4/21/2020	470	100	100	4.8	2.6	30	180	0	0	0.08	0.20	0.064	0.079	0.05	0.36	220	37	0	721	0.4
32S/13E-31H13	1/14/2020	430	120	110	4.6	3.3	29	190	10	0	0.00	0.25	0.084	0.094	0.05	0.28	220	35	0	730	0.4
32S/13E-31H13	10/14/2019	280	99	93	4.7	2.7	32	180	1	0	0.00	0.18	0.064	0.066	0.05	0.30	210	37	0	675	0.3
32S/13E-31H13	7/9/2019	500	90	83	4.7	3.7	36	170	1	0	0.08	0.16	0.062	0.059	0.08	0.35	200	26	0	654	2.9
32S/13E-31H13	4/9/2019	460	100	79	4.0	3.8	34	180	8	ND	0.05	0.18	0.075	0.055	0.07	0.31	210	27	ND	690	2.1
32S/13E-31H13	1/8/2019	400	99	79	4.3	6.7	42	180	19	ND	0.06	0.17	0.057	0.057	0.13	0.29	200	19	ND	703	2.2
32S/13E-31H13	10/9/2018	400	84	79	4.2	4.9	43	190	13	ND	0.052	0.16	0.043	0.045	0.083	0.18	220	23	ND	678	2.1
32S/13E-31H13	7/12/2018	470	81	72	3.9	3.9	38	190	13	ND	0.096	0.14	0.041	0.045	0.064	0.31	220	25	ND	699	0.86
32S/13E-31H13	4/10/2018	490	82	78	3.8	4.5	44	190	20	ND	ND	0.14	0.039	0.041	0.083	0.30	220	30	ND	676	4.2
32S/13E-31H13	1/10/2018	430	75	75	3.8	4.3	38	190	7.2	ND	ND	0.14	0.050	0.046	0.07	0.25	210	26	ND	626	2.5
32S/13E-31H13	10/11/2017	390	77	70	3.7	4.9	38	190	15	ND	0.11	0.16	0.034	0.039	0.079	0.28	220	29	ND	648	1.1
32S/13E-31H13	7/11/2017	390	76	80	3.9	7.8	45	190	30	ND	ND	0.15	0.033	0.036	0.13	0.28	210	19	ND	680	2.2
32S/13E-31H13	4/12/2017	430	79	87	4.4	4	44	180	21	ND	0.13	0.17	0.024	0.043	0.77	0.28	220	40	ND	667	4.5
32S/13E-31H13	1/13/2017	480	81	95	4.7	3.9	41	190	14	ND	ND	0.19	0.037	0.056	0.065	0.31	220	33	ND	652	3.3
32S/13E-31H13	10/12/2016	410	80	87	4.3	4.2	43	190	22	ND	ND	0.18	0.04	0.055	0.072	0.29	220	33	ND	678	2.3
32S/13E-31H13	7/20/2016	510	91	99	5.1	2.4	34	170	19	<0.022	<0.080	0.22	0.043	0.054	0.038	0.43	210	44	<4.1	694	1.2
32S/13E-31H13	4/13/2016	450	94	99	4.6	2.5	33	150	25	<0.022	<0.080	0.22	0.054	0.045	0.035	0.44	200	51	<4.1	701	1.2
32S/13E-31H13	1/13/2016	460	99	97	4.8	2.6	32	150	30	<0.022	<0.080	0.19	0.084	<0.010	0.038	0.53	190	43	<4.1	717	0.33
32S/13E-31H13	10/14/2015	370	85	91	4.8	3.1	32	159	45	<0.05	<1	0.23	<0.10	0.060	0.043	0.26	189	30	<10	710	0.30
32S/13E-31H13	7/15/2015	390	90	99	4.4	2.7	34	145	55	<0.05	<1	0.21	<0.1	0.06	0.034	0.24	185	40	<10	730	0.24
32S/13E-31H13	4/16/2015	360	89	86	4.8	2.6	31	137	58	<0.05	<1	0.20	<0.1	0.057	0.030	0.266	172	35	<10	680	0.42
32S/13E-31H13	1/14/2015	390	90	84	4.8	2	31	140	61	<0.05	<1	0.18	<0.1	0.059	0.035	0.24	170	30	<10	670	0.47
32S/13E-31H13	10/16/2014	370	80	84	5.0	3.2	32	146	59	<0.05	<1	0.19	<0.1	0.055	0.044	0.18	170	24	<10	720	0.61
32S/13E-31H13	7/30/2014	380	86	81	4.2	3.6	35	158	61	<0.05	<1	0.16	<0.1	0.05	0.047	0.17	175	17	<10	730	0.25
32S/13E-31H13	4/17/2014	380	84	86	5.2	3	26	120	87	<0.05	<1	0.18	<0.1	0.08	0.032	0.3	143	23	<10	730	0.45
32S/13E-31H13	1/16/2014	390	89	91	5.0	4.1	34	119	103	<0.05	<1	0.20	<0.1	0.06	0.043	0.34	136	17	<10	740	0.30
32S/13E-31H13	10/16/2013	410	84	87	4.7	5.3	33	114	130	<0.05	<1	0.17	<0.1	0.08	0.053	0.3	124	10	<10	760	0.28
32S/13E-31H13	7/11/2013	420	80	70	4.8	4.5	35	116	120	<0.05	<1	0.19	<0.1	0.06	0.047	0.21	136	20	<10	760	0.19
32S/13E-31H13	4/11/2013	450	77	77	4.7	5.8	38	113	150	<0.05	<1	0.19	<0.1	0.06	0.069	0.2	128	15	<10	780	0.15
32S/13E-31H13	1/15/2013	420	74	78	4.7	7.0	40	110	180	<0.05	<1	0.18	<0.1	<0.01	0.087	<0.1	125	15	<10	810	0.55
32S/13E-31H13	10/30/2012	380	88	99	5.7	3.3	30	160	63	<0.05	<1	0.25	<0.1	0.08	0.035	0.3	168	7.5	<10	740	0.33
32S/13E-31H13	7/25/2012	390	108	107	5.5	2.7	29	13	66	<0.05	<1	0.28	<0.1	0.079	0.0037	0.23	168	155	<10	750	0.84
32S/13E-31H13	4/19/2012	390	110	83	4.3	2.5	26	400	68	<0.1	<1	0.22	0.23	0.09	0.032	0.39	420	20	<10	790	0.24
32S/13E-31H13	1/12/2012	410	94	95	4.5	3.0	28	300	68	<0.1	<1	0.24	<0.2	0.1	0.032	0.31	320	20	<10	760	0.89
32S/13E-31H13	11/21/2011	410	94	83	4.6	3.4	30	152	72	<0.05	<1	0.21	<0.1	0.09	0.035	0.3	160	8	<10	730	0.65
32S/13E-31H13	7/25/2011	420	90	84	7.1	4.4	31	148	91.8	<0.05	<1	0.20	<0.1	0.071	0.046	0.297	150	2.5	<5	760	1.90
32S/13E-31H13	4/21/2011	380	88	110	6.3	4.0	27	140	101	<0.05	<1	0.41	0.14	0.07	0.13	0.33	140	<2.0	<2.0	750	N/A
32S/13E-31H13	1/24/2011	430	83	73	6	6.3	31	160	100	<0.05	<1.0	0.22	0.11	0.66	0.078	0.28	160	<2.0	<2.0	780	0.49
32S/13E-31H13	10/21/2010	410	87	100	3.9	6.0	33	148	100	<0.1	<1.0	0.14	<0.1	NA	0.087	<0.3	148	<10	<10	796	0.66
32S/13E-31H13	7/26/2010	446	94	93.0	8.81	10.2	32.0	38.4	120	<0.10	<0.50	0.142	<0.10	0.32	0.196	0.48	56.0	17.6	<1.0	700	22.4
32S/13E-31H13	4/26/2010	416	96	87.6	9.86	14.8	37.1	46.0	150	<0.1	0.63	0.132	<0.10	0.39	0.579	0.44	58.0	12.0	<1.0	780	56.2
32S/13E-31H13	1/27/2010	498	89	79.6	10.2	15.6	38.0	31.0	180	<0.10	0.56	0.132	<0.10	0.19	0.283	0.38	51.0	20.0	<1.0	810	23.6

Appendix A: NCMA Sentry Wells Water Quality Data



Well	Date	TDS mg/l	Chloride mg/l	Sodium mg/l	Potassium mg/l	Calcium mg/l	Magnesium mg/l	Bicarbonate as CaCO3 mg/l	Sulfate mg/l	Nitrate (as N) mg/l	Total Kjeldahl Nitrogen mg/l	Boron mg/l	Fluoride mg/l	Iodide mg/l	Manganese mg/l	Bromide mg/l	Total Alkalinity as CaCO3 mg/l	Carbonate as CaCO3 mg/l	Hydroxide as CaCO3 mg/l	Specific Conductivity umhos/cm	Iron mg/l
32S/13E-31H13	10/20/2009	446	100	97.1	12.8	16.4	37.9	26.6	180	< 0.10	0.56	0.168	0.2	< 0.10	0.180	0.42	42.6	16.0	< 1.0	760	18.9
32S/13E-31H13	8/19/2009	426	160	101	18.9	93.2	29.1	64.4	36	< 0.10	0.98	NA	0.2	0.31	5.490	0.60	84.4	20.0	< 1.0	790	682
32S/13E-31H13	5/16/1983	770	60	70	NA	90	70	330	120	9	NA	NA	0.1	NA	0.02	NA	330	ND	ND	1,100	0.24

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Well	Date	TDS mg/l	Chloride mg/l	Sodium mg/l	Potassium mg/l	Calcium mg/l	Magnesium mg/l	Bicarbonate as CaCO3 mg/l	Sulfate mg/l	Nitrate (as N) mg/l	Total Kjeldahl Nitrogen mg/l	Boron mg/l	Fluoride mg/l	Iodide mg/l	Manganese mg/l	Bromide mg/l	Total Alkalinity as CaCO3 mg/l	Carbonate as CaCO3 mg/l	Hydroxide as CaCO3 mg/l	Specific Conductivity umhos/cm	Iron mg/l
32S/13E-31H09	10/5/2021	690	45	47	2.5	110	49	350	170	0.1	0.32	0.078	0.13	0.1	0.031	0.15	350	8.2	8.2	1,050	0.05
32S/13E-31H09	7/14/2021	620	45	47	2.5	110	50	360	170	0.048	0.23	0.068	0.13	0.016	0.032	0.18	360	8.2	8.2	1,070	0.11
32S/13E-31H09	4/6/2021	650	45	45	2.3	110	48	360	170	0.033	0.14	0.07	0.13	0.012	0.034	0.19	360	8.2	8.2		0.23
32S/13E-31H09	1/7/2021	600	46	48	2.6	110	51	350	170	0.026	0.43	0.071	0.14	0.018	0.037	0.2	350	8.2	8.2	1,060	0.2
32S/13E-31H09	10/13/2020	670	46	46	2.5	110.0	47	350	170	0	0.00	0.07	0.130	0.017	0.03	0.17	350	0	0	1,050	0.2
32S/13E-31H09	7/7/2020	780	44	49	2.6	120.0	53	370	170	0	0.20	0.07	0.110	0.018	0.04	0.13	370	8	8	1,060	0.2
32S/13E-31H09	4/21/2020	620	42	48	2.7	120.0	50	380	170	0	0.19	0.07	0.160	0.018	0.04	0.14	380	0	0	1,070	0.3
32S/13E-31H09	1/14/2020	670	44	50	2.8	130.0	52	350	170	0	0.11	0.08	0.130	0.021	0.04	0.16	350	0	0	1,010	0.3
32S/13E-31H09	10/15/2019	670	43	51	2.7	120.0	50	360	170	0	0.10	0.07	0.110	0.016	0.04	0.16	360	0	0	1,060	0.2
32S/13E-31H09	4/9/2019	620	43	44	2.5	110	50	360	170	ND	0.11	0.08	0.14	0.013	0.033	0.14	360	ND	ND	1,060	0.05
32S/13E-31H09	1/8/2019	690	44	44	2.6	110	52	370	170	0.047	0.11	0.075	0.16	0.018	0.035	0.15	370	ND	ND	1,060	0.080
32S/13E-31H09	10/9/2018	690	42	46	2.7	110	54	360	170	0.03	0.15	0.067	0.11	0.017	0.035	0.09	360	ND	ND	1,080	0.042
32S/13E-31H09	7/10/2018	630	46	47	2.6	120	53	360	170	ND	0.11	0.073	0.13	0.018	0.032	0.17	360	ND	ND	1,100	0.041
32S/13E-31H09	4/10/2018	700	44	45	2.5	110	51	360	170	0.074	0.11	0.068	0.13	0.016	0.035	0.17	360	ND	ND	1,060	0.10
32S/13E-31H09	1/10/2018	680	40	46	2.6	120	53	360	160	ND	0.14	0.062	0.16	0.019	0.048	0.14	360	ND	ND	1,040	0.38
32S/13E-31H09	10/11/2017	640	40	47	2.6	120	55	370	160	0.024	0.12	0.079	0.13	0.016	0.046	0.13	370	ND	ND	1020	0.34
32S/13E-31H09	7/11/2017	750	40	48	2.8	120	56	360	170	ND	ND	0.075	0.11	0.015	0.057	0.15	360	ND	ND	1,050	0.42
32S/13E-31H09	4/12/2017	620	42	52	3.1	130	60	360	170	0.037	ND	0.082	0.17	0.017	0.05	0.14	360	ND	ND	1,040	0.30
32S/13E-31H09	1/11/2017	640	61	53	3	100	48	320	150	ND	ND	0.071	0.16	0.02	0.05	0.24	320	ND	ND	976	0.40
32S/13E-31H09	10/12/2016	720	46	49	2.8	120	56	370	170	0.029	0.18	0.069	0.12	0.021	0.041	0.18	370	ND	ND	1070	0.36
32S/13E-31H09	7/20/2016	680	45	50	2.9	120	56	370	160	0.0407	0.14	0.075	0.15	0.013	0.049	0.16	370	<8.2	<8.2	1,060	0.33
32S/13E-31H09	4/13/2016	670	43	48	2.9	110	57	350	160	<0.022	0.2	0.062	0.14	0.012	0.056	0.18	350	<8.2	<8.2	1,040	0.46
32S/13E-31H09	1/12/2016	630	48	48	2.8	110	54	350	180	0.051	0.14	0.042	0.24	0.017	0.047	0.36	350	<8.2	<8.2	1,100	0.46
32S/13E-31H09	10/14/2015	680	43	44	3.1	100	50	360	160	<0.05	<1	0.089	0.28	0.02	0.033	<0.10	360	<10	<10	1,060	0.18
32S/13E-31H09	7/15/2015	680	43	52	2.4	120	56	360	170	<0.05	<1	0.079	0.11	0.01	0.033	<0.1	360	<10	<10	1,070	0.13
32S/13E-31H09	4/16/2015	680	49	41	2.4	100	47	350	170	<0.05	<1	0.068	0.114	<0.01	0.039	<0.1	350	<10	<10	1,030	0.47
32S/13E-31H09	10/16/2014	670	40	43	2.8	110	50	3500	150	<0.05	<1	0.055	0.103	<0.01	0.03	<0.1	350	<10	<10	1,060	0.064
32S/13E-31H09	7/30/2014	670	43	43	2.2	110	48	360	160	<0.05	<1	<0.1	0.15	<0.01	0.029	<0.1	360	<10	<10	1,070	0.057
32S/13E-31H09	4/15/2014	680	42	43	3.3	87	43	340	170	<0.05	<1	0.09	0.11	<0.01	0.023	<0.1	340	<10	<10	1,070	0.05
32S/13E-31H09	1/16/2014	680	45	42	2.6	100	46	360	171	<0.05	<1	<0.05	0.13	<0.01	0.032	<0.1	360	<10	<10	1,060	0.18
32S/13E-31H09	10/16/2013	670	40	44	2.6	100	47	350	180	0.47	<1	<0.05	0.15	<0.01	0.03	<0.1	350	<10	<10	1,053	0.11
32S/13E-31H09	7/10/2013	670	44	43	2.8	110	52	350	180	<0.05	<1	0.072	0.12	<0.01	0.032	<0.1	350	<10	<10	1,070	0.11
32S/13E-31H09	4/11/2013	720	43	40	2.7	98	46	350	170	<0.05	<1	0.072	0.14	<0.01	0.029	<0.1	350	<10	<10	1,070	0.12
32S/13E-31H09	1/16/2013	660	43	43	2.7	100	47	360	180	<0.05	<1	0.07	0.1	<0.01	0.031	<0.1	360	<10	<10	1,060	0.130
32S/13E-31H09	10/30/2012	660	40	44	2.9	110	49	345	170	<0.05	<1	0.071	0.14	<0.01	0.03	<0.1	345	<10	<10	1,070	0.086
32S/13E-31H09	7/24/2012	700	47	44	2.8	93	45	356	180	<0.05	<1	<0.1	0.17	<0.01	0.029	<0.1	356	<10	<10	1,070	0.660
32S/13E-31H09	4/25/2012	680	48	44	2.7	95	43	350	200	<0.1	<1	<0.1	0.26	<0.01	0.032	<0.2	350	<10	<10	1,070	0.200
32S/13E-31H09	1/10/2012	690	45	44	2.6	100	44	340	160	<0.05	<1	<0.1	0.2	<0.01	0.024	<0.1	340	<10	<10	1,070	0.100
32S/13E-31H09	11/22/2011	690	41	39	2.7	100	46	350	160	<0.1	<1	0.046	<0.2	0.013	0.03	<0.2	350	<10	<10	1,010	0.0
32S/13E-31H09	7/25/2011	690	44	39	4.5	86	40	340	166.9	<0.05	<1	<0.1	0.145	<0.01	0.026	<0.1	340	<5	<5	1,070	<0.1

Appendix A: NCMA Sentry Wells Water Quality Data



Well	Date	TDS mg/l	Chloride mg/l	Sodium mg/l	Potassium mg/l	Calcium mg/l	Magnesium mg/l	Bicarbonate as CaCO3 mg/l	Sulfate mg/l	Nitrate (as N) mg/l	Total Kjeldahl Nitrogen mg/l	Boron mg/l	Fluoride mg/l	Iodide mg/l	Manganese mg/l	Bromide mg/l	Total Alkalinity as CaCO3 mg/l	Carbonate as CaCO3 mg/l	Hydroxide as CaCO3 mg/l	Specific Conductivity umhos/cm	Iron mg/l
12N/36W-36L01	10/6/2021	890	33	67	3.3	130	44	180	400	0.39	0.2	0.15	0.1	0.1	0.01	0.4	180	8.2	8.2		0.05
12N/36W-36L01	7/15/2021	840	34	63	3.3	120	43	180	420	0.42	0.088	0.17	0.05	0.005	0.004	0.14	180	8.2	8.2	1,180	0.03
12N/36W-36L01	4/8/2021	840	38	67	3.4	130	44	180	420	0.45	0.19	0.16	0.047	0.005	0.004	0.07	180	8.2	8.2	1,170	0.03
12N/36W-36L01	1/7/2021	820	39	69	3.3	130	47	180	430	0.46	0.48	0.16	0.053	0.005	0.004	0.17	180	8.2	8.2	1,170	0.03
12N/36W-36L01	10/11/2020	940	39	67	3.3	130.0	44	180	440	0	0.14	0.16	0.046	0.000	0.00	0.10	180	0	0	1,180	0.1
12N/36W-36L01	7/8/2020	1,000	40	71	3.5	130.0	46	180	430	0	0.20	0.17	0.051	0.100	0.01	0.13	180	8	8	1,190	0.1
12N/36W-36L01	4/22/2020	880	38	65	3.3	120.0	42	180	420	0	0.14	0.16	0.034	0.000	0.00	0.08	180	0	0	1,210	0.1
12N/36W-36L01	1/15/2020	960	39	70	3.6	140.0	45	180	420	0	0.13	0.18	0.056	0.000	0.00	0.09	180	0	0	1,140	0.1
12N/36W-36L01	10/15/2019	880	38	73	3.6	140.0	45	180	440	0	0.09	0.18	0.044	0.000	0.00	0.12	180	0	0	1,190	0.1
12N/36W-36L01	7/10/2019	700	37	70	3.6	140.0	51	180	430	0	0.15	0.17	0.047	0.000	0.00	0.00	180	0	0	1,180	0.0
12N/36W-36L01	4/10/2019	870	39	64	3.5	130	48	180	440	0.46	1.5	0.2	0.06	ND	ND	0.14	180	ND	ND	1,190	0.08
12N/36W-36L01	1/9/2019	840	39	70	3.4	140	46	180	420	0.45	0.23	0.17	0.064	ND	ND	0.089	180	ND	ND	1,200	ND
12N/36W-36L01	10/10/2018	850	38	67	3.5	140	49	180	430	0.43	0.16	0.16	0.03	ND	ND	ND	180	ND	ND	1,190	0.19
12N/36W-36L01	7/10/2018	960	39	64	3.4	130	47	180	430	0.50	0.11	0.17	0.12	ND	ND	0.063	180	ND	ND	1,230	ND
12N/36W-36L01	4/11/2018	900	39	70	3.5	140	49	180	430	0.48	0.11	0.16	0.052	ND	ND	0.10	180	ND	ND	1,190	ND
12N/36W-36L01	1/11/2018	940	38	76	3.5	140	50	180	440	0.37	0.19	0.17	0.073	ND	ND	0.097	180	ND	ND	1,180	ND
12N/36W-36L01	10/11/2017	880	35	65	3.7	140	50	190	430	0.43	0.14	0.19	0.048	ND	0.054	ND	190	ND	ND	1210	0.23
12N/36W-36L01	7/12/2017	1,000	37	73	3.9	150	55	180	420	0.36	0.15	0.17	0.034	ND	0.0048	ND	180	ND	ND	1,180	0.23
12N/36W-36L01	4/12/2017	860	37	73	4	130	49	180	420	0.45	0.14	0.17	0.017	ND	0.0087	0.06	180	ND	ND	1,170	0.43
12N/36W-36L01	1/12/2017	870	38	76	3.8	150	55	190	430	0.46	0.12	0.21	0.036	ND	ND	0.07	190	ND	ND	1,180	0.11
12N/36W-36L01	10/12/2016	890	35	72	3.8	140	56	190	430	0.42	0.11	0.17	0.036	ND	ND	0.12	190	ND	ND	1220	0.037
12N/36W-36L01	7/19/2016	920	37	69	3.6	130	50	180	430	0.4292	0.25	0.15	0.043	<0.010	<0.0040	0.10	180	<8.2	<8.2	1,200	<0.030
12N/36W-36L01	4/12/2016	860	38	65	3.5	130	49	180	390	0.5	<0.080	0.16	0.036	<0.010	<0.0040	0.12	180	<8.2	<8.2	1,210	<0.05
12N/36W-36L01	1/14/2016	890	36	64	3.4	130	49	180	410	0.47	<0.080	0.15	0.062	<0.010	<0.0040	0.10	180	<8.2	<8.2	1,210	0.070
12N/36W-36L01	10/15/2015	920	37	63	4.2	120	47	180	400	0.68	<1	0.15	<0.20	<0.01	<0.005	<0.20	180	<10	<10	1,210	<0.05
12N/36W-36L01	7/16/2015	930	39	74	2.8	140	50	180	410	1.2	<1	0.15	<0.1	<0.01	<0.005	<0.1	180	<10	<10	1,210	<0.05
12N/36W-36L01	4/14/2015	890	38	55	3.1	110	44	180	440	0.759	1.0	0.16	<0.2	<0.01	<0.005	<0.2	180	<10	<10	1,160	<0.05
12N/36W-36L01	1/13/2015	880	39	59	3.0	120	45	180	440	0.584	<1	0.14	<0.1	<0.01	<0.005	<0.1	180	<10	<10	1,160	<0.05
12N/36W-36L01	10/15/2014	910	34	58	3.7	120	43	180	380	0.950	<1	0.14	<0.2	<0.01	<0.005	<0.2	180	<10	<10	1,210	<0.05
12N/36W-36L01	7/30/2014	890	36	61	3.2	120	47	180	390	0.603	<1	0.12	<0.2	<0.01	<0.005	<0.2	180	<10	<10	1,220	<0.05
12N/36W-36L01	4/16/2014	910	36	46	2.6	76	27	180	440	0.77	<1	0.15	<0.1	<0.01	<0.005	<0.1	180	<10	<10	1,200	<0.05
12N/36W-36L01	1/16/2014	910	35	60	3.1	110	42	180	416	1.00	1.1	0.14	<0.2	<0.01	<0.005	<0.2	180	<10	<10	1,190	<0.05
12N/36W-36L01	10/16/2013	910	40	63	4.5	120	43	170	460	0.76	<1	0.13	<0.2	<0.01	<0.005	<0.2	170	<10	<10	1,210	<0.05
12N/36W-36L01	7/10/2013	910	39	54	3.2	120	42	175	430	0.78	<1	0.14	<0.1	<0.01	<0.005	<0.1	175	<10	<10	1,210	0.18
12N/36W-36L01	4/11/2013	890	38	59	3.6	110	43	180	420	0.82	<1	0.16	<0.2	<0.01	<0.005	<0.2	180	<10	<10	1,200	<0.05
12N/36W-36L01	1/15/2013	870	39	61	3.4	110	41	178	440	0.57	<1	0.15	<0.2	<0.01	<0.005	<0.2	178	<10	<10	1,190	0.13
12N/36W-36L01	10/31/2012	910	35	66	4.0	130	46	165	400	1.60	<1	0.16	0.2	<0.01	<0.005	<0.5	165	<10	<10	1,200	<0.05
12N/36W-36L01	7/24/2012	880	43	65	3.9	110	41	168	420	<0.05	<1	0.16	<0.1	<0.01	0.02	<0.1	168	<10	<10	1,190	0.19
12N/36W-36L01	4/18/2012	880	47	52	3.2	95	36	180	450	0.42	<1	0.12	<0.2	<0.01	<0.005	<0.2	180	<10	<10	1,190	<0.1
12N/36W-36L01	1/11/2012	790	41	64	4.1	120	44	170	380	1.30	<1	0.19	0.18	<0.02	<0.005	<0.2	170	<10	<10	1,190	<0.1
12N/36W-36L01	11/21/2011	910	39	55	3.5	110	40	180	380	0.37	<1	0.16	<0.2	<0.01	<0.005	<0.2	180	<10	<10	1,200	<0.1
12N/36W-36L01	7/25/2011	890	41	65	5.7	110	43	170	408.9	0.39	<1	0.15	<0.1	<0.01	<0.005	<0.1	170	<5	<5	1,200	0.024
12N/36W-36L01	4/21/2011	890	42	61	4.2	100	30	170	415	0.60	<1	0.19	0.07	<0.01	<0.005	<0.1	170	<2.0	<2.0	1,200	NA
12N/36W-36L01	1/24/2011	890	41	55	5.1	98	36	180	400	0.50	<1.0	0.20	0.15	<0.10	<0.005	<0.1	180	<2.0	<2.0	1,200	<0.1
12N/36W-36L01	10/21/2010	910	38	76	3.6	130	47	169	400	0.39	<1.0	0.10	<0.1	NA	<0.005	<0.3	169	<10	<10	1,213	<0.1
12N/36W-36L01	7/27/2010	707	36	64.2	3.70	127	47.4	182	420	0.40	< 0.50	0.158	< 0.10	< 0.10	< 0.00500	0.11	182	< 1.0	< 1.0	1,100	< 0.100
12N/36W-36L01	4/26/2010	860	42	70.3	4.13	129	48.9	191	400	0.45	0.77	0.223	< 0.1	0.15	0.057	0.14	191	< 1.0	< 1.0	1,100	4.53
12N/36W-36L01	10/21/2009	856	38	72.0	4.64	131	48.2	192	420	0.49	0.84	0.150	0.12	< 0.10	0.0994	0.13	192	< 1.0	< 1.0	1,100	1.68
12N/36W-36L01	8/20/2009	890	39	78.0	4.21	138	48.1	184	390	0.49	0.56	NA	< 0.10	< 0.10	0.185	0.14	184	< 1.0	< 1.0	1,200	2.03
12N/36W-36L01	5/11/2009	832	63	83.8	4.88	111	45.4	204	330	NA	NA	NA	0.12	NA	0.551	0.22	204	< 1.0	< 1.0	1,200	4.02

Appendix A: NCMA Sentry Wells Water Quality Data



Well	Date	TDS mg/l	Chloride mg/l	Sodium mg/l	Potassium mg/l	Calcium mg/l	Magnesium mg/l	Bicarbonate as CaCO3 mg/l	Sulfate mg/l	Nitrate (as N) mg/l	Total Kjeldahl Nitrogen mg/l	Boron mg/l	Fluoride mg/l	Iodide mg/l	Manganese mg/l	Bromide mg/l	Total Alkalinity as CaCO3 mg/l	Carbonate as CaCO3 mg/l	Hydroxide as CaCO3 mg/l	Specific Conductivity umhos/cm	Iron mg/l	
12N/36W-36L01	3/26/1996	882	35	66	4.8	124	47	233	408	0.4518	NA	0.24	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
12N/36W-36L01	6/8/1976	936	38	72	3.5	130	48	223	423	0.1355	NA	0.15	0.7	NA	NA	NA	NA	NA	NA	NA	NA	NA

Appendix A: NCMA Sentry Wells Water Quality Data



Well	Date	TDS mg/l	Chloride mg/l	Sodium mg/l	Potassium mg/l	Calcium mg/l	Magnesium mg/l	Bicarbonate as CaCO3 mg/l	Sulfate mg/l	Nitrate (as N) mg/l	Total Kjeldahl Nitrogen mg/l	Boron mg/l	Fluoride mg/l	Iodide mg/l	Manganese mg/l	Bromide mg/l	Total Alkalinity as CaCO3 mg/l	Carbonate as CaCO3 mg/l	Hydroxide as CaCO3 mg/l	Specific Conductivity umhos/cm	Iron mg/l
12N/36W-36L02	10/6/2021	760	93	110	5.7	96	41	260	230	0.2	1.5	0.3	0.079	0.13	0.14	0.05	0.2	8.2	8.2		0.031
12N/36W-36L02	7/15/2021	820	98	100	5.4	90	39	260	240	0.024	2.1	0.31	0.1	0.13	0.14	0.59	260	8.2	8.2	1,190	0.11
12N/36W-36L02	4/8/2021	800	99	91	4.8	77	35	270	240	0.024	1.8	0.28	0.099	0.13	0.12	0.57	270	8.2	8.2	1,190	0.036
12N/36W-36L02	1/7/2021	860	98	110	6.1	100	46	260	240	0.024	1.8	0.34	0.096	0.18	0.16	0.43	260	8.2	8.2	1,180	0.26
12N/36W-36L02	10/11/2020	870	98	98	5.4	95.0	40	250	250	0	1.70	0.29	0.084	0.130	0.13	0.62	250	0	0	1,190	0.0
12N/36W-36L02	7/8/2020	930	100	110	5.8	97.0	42	260	240	0	1.80	0.31	0.093	0.130	0.14	0.65	260	8	8	1,210	0.1
12N/36W-36L02	4/22/2020	770	100	110	6.0	97.0	40	270	230	0	2.10	0.33	0.069	0.120	0.15	0.67	270	0	0	1,190	0.6
12N/36W-36L02	1/15/2020	860	100	110	6.2	100.0	43	260	240	0	1.90	0.35	0.085	0.160	0.16	0.35	260	0	0	1,160	0.2
12N/36W-36L02	10/15/2019	780	99	120	6.3	100.0	41	270	240	0	2.00	0.35	0.078	0.130	0.17	0.66	270	0	0	1,210	0.5
12N/36W-36L02	7/10/2019	660	99	100	5.9	94.0	44	260	240	0	1.90	0.33	0.096	0.150	0.15	0.60	260	0	0	1,200	0.1
12N/36W-36L02	4/10/2019	820	100	100	5.7	96	43	270	240	ND	2.0	0.32	0.094	0.13	0.15	0.5	270	ND	ND	1,220	0.17
12N/36W-36L02	1/9/2019	820	100	110	6.1	99	42	270	240	ND	2.2	0.33	0.099	0.14	0.15	0.5	270	ND	ND	1220	0.42
12N/36W-36L02	10/10/2018	840	99	110	7.2	100	46	260	240	ND	2	0.33	0.06	0.13	0.19	0.40	260	ND	ND	1,200	5.2
12N/36W-36L02	7/10/2018	800	100	99	5.6	89	41	260	240	ND	2.0	0.33	0.14	0.14	0.14	0.62	260	ND	ND	1,260	0.9
12N/36W-36L02	4/11/2018	850	100	110	6.0	96	42	260	230	0.044	1.8	0.32	0.097	0.16	0.17	0.66	260	ND	ND	1,210	2.1
12N/36W-36L02	1/11/2018	800	100	110	6.3	97	44	260	230	ND	2.0	0.38	0.12	0.17	0.17	0.65	260	ND	ND	1,190	0.51
12N/36W-36L02	10/11/2017	830	100	100	5.9	97	44	280	230	ND	1.8	0.36	0.087	0.13	0.16	0.66	280	ND	ND	1220	0.41
12N/36W-36L02	7/12/2017	940	97	100	6.1	98	45	250	230	ND	2.2	0.32	0.096	0.13	0.16	0.59	250	ND	ND	1,200	0.75
12N/36W-36L02	4/12/2017	780	97	120	6.7	98	43	250	240	ND	2.2	0.35	0.082	0.14	0.16	0.51	250	ND	ND	1,190	0.77
12N/36W-36L02	1/12/2017	810	94	120	6.6	110	48	270	240	ND	2	0.36	0.08	0.19	0.19	0.53	270	ND	ND	1,200	1.1
12N/36W-36L02	10/12/2016	820	99	120	6.6	110	50	270	240	ND	2	0.35	0.084	0.14	0.17	0.58	270	ND	ND	1230	0.1
12N/36W-36L02	7/19/2016	820	97	110	6.2	95	45	270	240	<0.022	2	0.33	0.081	0.1	0.15	0.65	270	<8.2	<0.82	1,220	0.14
12N/36W-36L02	4/12/2016	800	96	100	6	94	44	270	230	<0.022	1.8	0.32	0.12	0.12	0.14	0.81	270	<8.2	<0.82	1,240	0.37
12N/36W-36L02	1/14/2016	860	96	110	6.4	99	47	260	230	<0.018	1.6	0.34	0.10	0.078	0.17	0.65	260	<8.2	<8.2	1,240	1.9
12N/36W-36L02	10/15/2015	800	89	96	6.0	91	0.15	266	230	<0.05	2.2	0.32	0.22	0.098	0.15	0.37	266	<10	<10	1,220	0.32
12N/36W-36L02	7/16/2015	840	97	120	5.9	110	46	260	240	<0.05	2.44	0.34	0.11	0.11	0.15	0.59	260	<10	<10	1,230	0.16
12N/36W-36L02	4/14/2015	800	98	88	5.3	83	39	270	240	<0.05	2.9	0.33	0.104	0.089	0.13	0.380	270	<10	<10	1,180	0.40
12N/36W-36L02	1/13/2015	820	100	91	5.5	86	39	250	250	<0.05	2.2	0.31	0.105	0.09	0.13	0.322	250	<10	<10	1,190	0.077
12N/36W-36L02	10/15/2014	800	88	96	6.4	91	40	260	210	<0.05	2.1	0.32	<0.1	0.092	0.14	0.358	260	<10	<10	1,230	0.12
12N/36W-36L02	7/30/2014	800	98	99	5.8	88	39	280	210	<0.05	2.4	0.28	0.11	0.09	0.14	0.19	280	<10	<10	1,240	0.27
12N/36W-36L02	4/16/2014	820	95	89	6.3	73	31	280	210	<0.05	2.3	0.31	<0.1	0.09	0.13	0.35	280	<10	<10	1,240	0.22
12N/36W-36L02	1/16/2014	800	100	87	5	76	33	270	230	<0.05	2.3	0.31	0.23	0.09	0.14	0.44	270	<10	<10	1,230	0.41
12N/36W-36L02	10/16/2013	810	90	110	6.4	91	40	260	240	<0.05	2.2	0.32	<0.1	0.1	0.15	0.32	260	<10	<10	1,220	0.54
12N/36W-36L02	7/10/2013	790	105	94	5.8	88	38	260	240	<0.05	2.5	0.34	<0.1	0.08	0.13	0.11	260	<10	<10	1,240	0.31
12N/36W-36L02	4/11/2013	830	100	99	6.2	83	37	260	220	<0.05	2.2	0.35	<0.1	0.098	0.14	0.45	260	<10	<10	1,240	0.60
12N/36W-36L02	1/15/2013	770	110	110	6.7	84	38	265	220	<0.05	2.8	0.36	<0.1	0.02	0.14	0.20	265	<10	<10	1,240	0.61
12N/36W-36L02	10/31/2012	800	100	120	7.3	90	39	265	200	<0.1	2.4	0.4	0.34	0.12	0.14	0.34	265	<10	<10	1,250	0.30
12N/36W-36L02	7/24/2012	800	134	125	7.4	83	35	277	200	<0.05	2.3	0.42	0.13	0.12	0.14	0.31	277	<10	<10	1,250	0.52
12N/36W-36L02	4/18/2012	770	130	95	6.2	75	33	270	210	0.42	4	0.35	0.36	0.12	0.13	<0.2	270	<10	<10	1,250	0.77
12N/36W-36L02	1/11/2012	900	122	110	7.2	95	37	290	170	<0.1	4.8	0.48	0.28	<0.02	0.17	0.45	290	<10	<10	1,250	1.80
12N/36W-36L02	11/21/2011	780	130	95	6.1	77	33	270	160	<0.1	<1	0.4	<0.2	<0.01	0.13	0.45	270	<10	<10	1,240	0.40
12N/36W-36L02	7/25/2011	790	129	110	9.1	74	33	280	177	<0.05	2.3	0.36	0.12	0.14	0.13	0.51	280	<5	<5	1,280	2.30
12N/36W-36L02	4/21/2011	770	120	90	5.3	86	26	280	206	<0.05	2.3	0.24	0.26	0.14	0.004	0.57	280	<2.0	<2.0	1,270	NA
12N/36W-36L02	1/24/2011	800	120	95	7.6	75	30	300	190	<0.05	2.3	0.39	0.16	1.31	0.13	0.53	300	<2.0	<2.0	1,270	1.40
12N/36W-36L02	10/21/2010	770	120	130	7.6	89	44	275	160	<0.1	3.4	0.48	<0.1	NA	0.15	0.54	275	<10	<10	1,293	0.12
12N/36W-36L02	7/27/2010	737	110	121	7.81	91.1	38.9	268	190	< 0.10	< 0.50	0.427	0.10	0.77	0.180	0.80	268	< 1.0	< 1.0	1,200	0.845
12N/36W-36L02	4/26/2010	720	100	116	6.88	85.4	32.4	215	210	1.5	0.77	0.382	0.2	0.28	0.167	0.7	215	< 1.0	< 1.0	1,100	3.870
12N/36W-36L02	10/21/2009	638	99	113	6.15	81.6	23.0	172	200	< 0.10	3.2	0.268	0.33	57	0.128	0.61	172	< 1.0	< 1.0	940	0.255
12N/36W-36L02	8/20/2009	785	100	131	6.66	89.8	36.6	290	190	< 0.10	3.8	NA	0.15	0.27	0.307	0.75	290	< 1.0	< 1.0	1,200	0.830
12N/36W-36L02	5/11/2009	775	120	132	7.24	84	39.7	294	180	NA	NA	NA	0.18	NA	0.426	0.78	294	< 1.0	< 1.0	1,300	0.958



Appendix A: NCMA Sentry Wells Water Quality Data



Well	Date	TDS mg/l	Chloride mg/l	Sodium mg/l	Potassium mg/l	Calcium mg/l	Magnesium mg/l	Bicarbonate as CaCO3 mg/l	Sulfate mg/l	Nitrate (as N) mg/l	Total Kjeldahl Nitrogen mg/l	Boron mg/l	Fluoride mg/l	Iodide mg/l	Manganese mg/l	Bromide mg/l	Total Alkalinity as CaCO3 mg/l	Carbonate as CaCO3 mg/l	Hydroxide as CaCO3 mg/l	Specific Conductivity umhos/cm	Iron mg/l	
12N/36W-36L02	3/26/1996	772	127	130	8.7	86	36	390	148	0.0452	NA	0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
12N/36W-36L02	6/8/1976	820	126	118	6.6	94	44	393	184	0	NA	NA	0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA

Appendix A: NCMA Sentry Wells Water Quality Data



Well	Date	TDS mg/l	Chloride mg/l	Sodium mg/l	Potassium mg/l	Calcium mg/l	Magnesium mg/l	Bicarbonate as CaCO3 mg/l	Sulfate mg/l	Nitrate (as N) mg/l	Total Kjeldahl Nitrogen mg/l	Boron mg/l	Fluoride mg/l	Iodide mg/l	Manganese mg/l	Bromide mg/l	Total Alkalinity as CaCO3 mg/l	Carbonate as CaCO3 mg/l	Hydroxide as CaCO3 mg/l	Specific Conductivity umhos/cm	Iron mg/l
12N/35W-32C03	10/7/2021	320	76	68	2.6	15	6.5	56	32	8.4	0.2	0.078	0.053	0.1	0.01	0.18	56	4.1	4.1		0.054
12N/35W-32C03	7/15/2021	360	77	66	2.6	15	6.7	56	32	8.2	0.091	0.066	0.047	0.014	0.004	0.2	56	4.1	4.1	503	0.11
12N/35W-32C03	4/6/2021	330	77	69	2.6	15	7.2	54	31	8.2	0.098	0.088	0.045	0.005	0.004	0.21	54	4.1	4.1		0.03
12N/35W-32C03	1/6/2021	310	71	65	2.7	14	6.5	56	29	7.9	0.27	0.11	0.041	0.005	0.004	0.17	56	4.1	4.1	471	0.03
12N/35W-32C03	10/7/2020	350	64	63	2.5	13.0	6	54	26	8	0.00	0.11	0.066	0.000	0.00	0.18	54	0	0	430	0.0
12N/35W-32C03	7/7/2020	290	62	66	2.7	13.0	6	49	25	9	0.20	0.11	0.049	0.100	0.01	0.18	49	4	4	422	0.1
12N/35W-32C03	4/21/2020	300	62	63	2.6	13.0	6	54	27	8	0.95	0.10	0.051	0.000	0.00	0.16	54	0	0	446	0.0
12N/35W-32C03	1/14/2020	290	63	62	2.6	13.0	6	50	27	9	0.00	0.09	0.052	0.000	0.00	0.16	50	0	0	410	0.1
12N/35W-32C03	10/14/2019	190	60	63	2.6	12.0	6	48	25	9	0.00	0.10	0.043	0.000	0.00	0.18	48	0	0	422	0.1
12N/35W-32C03	7/9/2019	320	60	64	2.5	13.0	6	51	25	8	0.00	0.10	0.053	0.000	0.00	0.15	51	0	0	426	0.0
12N/35W-32C03	4/9/2019	320	64	60	2.7	14	6.2	54	28	8.4	0.09	0.10	0.06	ND	0.01	0.16	54	ND	ND	446	0.350
12N/35W-32C03	1/9/2019	290	64	70	2.8	14	6.2	53	29	8.6	0.19	0.12	0.051	ND	ND	0.18	53	ND	ND	440	0.038
12N/35W-32C03	10/9/2018	280	62	64	2.8	14	6.2	50	28	8.4	0.07	0.093	0.031	ND	ND	0.13	50	ND	ND	446	0.087
12N/35W-32C03	7/10/2018	300	64	60	2.5	13	5.8	54	27	8.5	ND	0.089	0.11	ND	ND	0.18	54	ND	ND	458	0.047
12N/35W-32C03	4/10/2018	320	66	62	2.6	13	6.1	51	30	8.4	ND	0.087	0.047	ND	ND	0.23	51	ND	ND	450	0.26
12N/35W-32C03	1/10/2018	320	62	67	2.7	14	6.4	50	27	8.2	0.11	0.09	0.073	ND	ND	0.20	50	ND	ND	438	0.21
12N/35W-32C03	10/11/2017	320	64	63	2.8	14	6.5	53	28	8.4	0.11	0.11	0.04	ND	0.01	0.17	53	ND	ND	445	0.6
12N/35W-32C03	7/11/2017	370	63	71	2.9	16	7	55	28	7.9	ND	0.094	0.035	ND	0.0062	0.21	55	ND	ND	450	0.3
12N/35W-32C03	4/11/2017	300	65	66	2.8	14	6.6	52	28	8	ND	0.082	0.038	ND	ND	0.19	52	ND	ND	442	0.077
12N/35W-32C03	1/13/2017	300	67	72	3	16	7.1	53	29	8.2	ND	0.093	0.033	ND	ND	0.21	53	ND	ND	449	0.072
12N/35W-32C03	10/13/2016	310	64	68	2.9	14	6.5	53	25	8.1	0.12	0.088	0.08	ND	ND	0.18	53	ND	ND	433	ND
12N/35W-32C03	7/20/2016	300	66	65	2.8	13	6.4	57	26	7.9064	<0.08	0.087	0.03	<0.010	<0.0040	0.16	57	<4.1	<4.1	450	0.039
12N/35W-32C03	4/13/2016	290	65	66	2.8	14	6.5	51	26	8.1323	0.086	0.083	0.039	<0.010	<0.0040	0.22	51	<4.1	<4.1	438	0.08
12N/35W-32C03	1/14/2016	290	69	68	2.9	14	6.3	50	27	8.6	<0.08	0.094	0.083	<0.010	<0.0040	0.16	50	<4.1	<4.1	430	0.079
12N/35W-32C03	10/14/2015	280	61	57	2.6	12	5.8	51	28	8.4	<1	0.090	<0.10	<0.01	<0.005	<0.10	51	<10	<10	430	0.33
12N/35W-32C03	7/14/2015	280	64	67	2.7	14	6.2	50	30	8.0	<1	0.10	<0.1	<0.01	<0.005	<0.1	50	<10	<10	440	0.22
12N/35W-32C03	4/15/2015	280	62	52	2.4	12	5.4	51	30	7.8	<1	0.081	<0.1	<0.01	<0.005	0.11	51	<10	<10	420	0.11
12N/35W-32C03	1/14/2015	290	63	56	2.3	13	5.8	51	30	8.2	<1	0.077	<0.1	<0.01	<0.005	0.1	51	<10	<10	420	0.38
12N/35W-32C03	10/16/2014	270	55	54	2.7	13	5.7	51	26	7.3	0.3	0.069	<0.1	<0.01	0.005	<0.1	51	<10	<10	430	0.35
12N/35W-32C03	7/30/2014	280	60	58	1.9	14	6.5	60	29	7.3	<1	<0.1	<0.1	<0.01	<0.005	<0.1	60	17	<10	450	0.16
12N/35W-32C03	4/15/2014	270	57	55	2.2	12	5	54	29	7.1	<1	0.096	<0.1	<0.01	<0.005	0.11	54	<10	<10	430	0.21
12N/35W-32C03	1/16/2014	300	62	57	2.8	14	6.3	54	35	8.1	8.2	<0.1	<0.1	<0.01	0.008	0.12	54	<10	<10	450	0.47
12N/35W-32C03	10/16/2013	310	58	62	2.9	15	6.4	54	38	7.5	<1	0.06	<0.1	<0.01	0.009	0.1	54	<10	<10	450	0.21
12N/35W-32C03	7/11/2013	290	60	45	2.4	14	5.9	61	30	7.4	<1	0.071	<0.1	<0.01	0.006	<0.1	61	<10	<10	440	0.17
12N/35W-32C03	4/12/2013	330	58	55	2.9	16	6.6	60	35	7.5	<1	0.091	<0.1	<0.01	0.019	0.1	60	<10	<10	460	0.49
12N/35W-32C03	1/15/2013	290	62	57	2.8	15	6.3	55	38	8.3	<1	0.089	<0.1	<0.01	0.01	<0.1	55	<10	<10	470	0.23
12N/35W-32C03	10/30/2012	330	57	60	3.3	19	7.5	60	36	7.8	<1	0.09	<0.1	<0.01	0.033	<0.1	60	<10	<10	470	1.9
12N/35W-32C03	7/25/2012	330	67	61	3.3	17	6.4	59	35	8.2	<1	<0.1	<0.1	<0.01	0.068	<0.1	59	<10	<10	460	0.49
12N/35W-32C03	4/19/2012	370	74	52	2.9	30	12	120	58	5	<1	0.17	0.2	<0.01	0.056	<0.2	120	<10	<10	580	1.3