Exhibit A

SB 610 Water Supply Assessment

For

Santa Rosa Downtown Station Area Specific Plan Update

March 3, 2020

Water Supply Assessment
for
Santa Rosa Downtown Station Area Specific Plan Update

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Acronyms

AF - Acre-feet
AFY – Acre-feet per year
BPU – Board of Public Utilities
CASGEM – California Statewide Groundwater Elevation Monitoring
CDFG – California Department of Fish and Game
CDFW – California Department of Fish and Wildlife
CEQA – California Environmental Quality Act
CFR – Code of Federal Regulations
CFS – Cubic Feet per Second
DDW – Division of Drinking Water
DPH – California Department of Public Health
DWR – Department of Water Resources
EIS – Environmental Impact Statement
ESA – Endangered Species Act
ESU – Evolutionarily Significant Unit
FERC – Federal Energy Regulatory Commission
GMP – Groundwater Master Plan
GPM – Gallons per minute
IRWP – Incremental Recycled Water Program
MGD – Million gallons per day
NMFS – National Marine Fisheries Service
NOI – Notice of Intent
PAD – Pre-application Document
PG&E – Pacific Gas and Electric Company
PRMD – Sonoma County Permit and Resources Management District
PVP – Potter Valley Project
REF – Residential Equivalency Factor
RPM – Reasonable and Prudent Measures
SB – Senate Bill
SMART – Sonoma-Marin Area Rail Transit
Sonoma Water – Sonoma County Water Agency
SRPWGMP – Santa Rosa Plain Watershed Groundwater Management Plan
State Water Board – State Water Resources Control Board
USACE – United States Army Corps of Engineers
USGS – United States Geological Survey
UWMP – Urban Water Management Plan
WSA – Water Supply Assessment

EXECUTIVE SUMMARY

Senate Bill 610 of 2001 (SB 610) requires that water suppliers provide a Water Supply Assessment (WSA) to planning agencies for any proposed projects which are subject to the California Environmental Quality Act (CEQA) and would demand an amount of water equivalent to or greater than the amount of water required by a 500 dwelling unit project. The proposed Santa Rosa Downtown Station Area Specific Plan Update (Project) is subject to CEQA and has an increase of approximately 7,399 residential dwelling units over the current Santa Rosa General Plan 2035 (General Plan 2035), so it is subject to SB 610. The Project addresses the community's housing needs as well as land use, transportation, economic development, and historic preservation issues associated with the intensification of housing development downtown. The City of Santa Rosa (City) is both the public water system and land use planning agency for the Project.

The Project is an update to the previously adopted 2007 Santa Rosa Downtown Station Area Specific Plan (2007 DSASP). Because the 2007 DSASP was the subject of a previous WSA and because the 2007 DSASP amended the General Plan 2035, the following analysis for the Project focuses on the change in development compared to the General Plan 2035. Therefore, the portion of the projected water demand for the Project analyzed in this WSA is the incremental increase in demand compared to the General Plan 2035.

A WSA addresses the current and planned future water demand of the water supplier, the projected demand of the proposed project, the projected water supply of the water supplier, and makes a determination of the sufficiency of its water supplies for the proposed project, in addition to the existing and planned future uses. SB 610 requires the water supplier to analyze total projected water supply sufficiency for twenty (20) years following the request for the WSA, which for this WSA is through 2040. Although this Project updates the General Plan through the horizon year of 2035, for purposes of this WSA, and in light of the 20-year projection required by SB 610, the City is making the conservative assumption that the entire Project water demand would occur by 2040.

As set forth in this WSA, the total water demand for the Project at buildout is projected to be a maximum of 1,845 acre-feet per year (AFY), while the incremental increase in water demand compared to the General Plan 2035 is projected to be a maximum of 870 AFY. The density and land use of the Project have been defined as part of the Project. The WSA concludes that the City's projected water supplies, consisting of existing and additional water supplies, are sufficient to meet the projected water demand associated with the Project, in addition to current and planned future uses, for the 20-year WSA planning horizon.

The City's water supply for the Project's projected water demand, in addition to current and future uses, consists of a combination of contractual entitlement from Sonoma Water as defined in the Restructured Agreement for Water Supply, the City's groundwater sources, and recycled water sources. Additionally, more stringent water conservation measures could be implemented to reduce demand if needed. The current existing supplies are projected to meet all demands through 2040.

1 ASSESSMENT

1.1 Introduction

California Water Code:
10910 (a) Any city or county that determines that a project, as defined in Section 10912, is subject to the California Environmental Quality Act (Division 13 (commencing with Section 21000) of the Public Resources Code) under Section 21080 of the Public Resources Code shall comply with this part.

10914 (a) Nothing in this part is intended to create a right or entitlement to water service or any specific level of water service.
(b) Nothing in this part is intended to either impose, expand, or limit any duty concerning the obligation of a public water system to provide certain service to its existing customers or to any future potential customers.
(c) Nothing in this part is intended to modify or otherwise change existing law with respect to projects which are not subject to this part.
(d) This part applies only to a project for which a notice of preparation is submitted on or after January 1, 1996.

The City has prepared this WSA for the Santa Rosa Downtown Station Area Specific Plan Update (Project) pursuant to California Water Code sections 10910-10915 as required by SB 610. To increase the accessibility of the information presented herein, each section of the WSA that responds directly to a requirement of the Water Code begins with a recitation of the applicable language from the pertinent Water Code provisions, which are addressed in that section of the WSA.

The purpose of this WSA is to perform the evaluation required by SB 610 in connection with the Project. It is not to reserve water, or to function as a "will serve" letter or any other form of commitment to supply water (per Water Code section 10914). The provision of water service will continue to be undertaken in a manner consistent with applicable City policies and procedures, consistent with existing law.

In accordance with SB 610, this WSA evaluates projected City water supply and projected Project demand for a twenty-year period, or until 2040. Although this Project updates the General Plan through the horizon year of 2035, for purposes of this WSA, it is anticipated that the entire Project water demand would occur by 2040. Because the City 2015 Urban Water Management Plan (City 2015 UWMP) includes supply and demand projections through 2040, where the City 2015 UWMP is the source of information, data through 2040 is presented in this WSA.

1.2 Applicability

1.2.1 When a WSA is Required

California Water Code:
10910 (a) Any city or county that determines that a project, as defined in Section 10912, is subject to the California Environmental Quality Act (Division 13 (commencing with Section 21000) of the Public Resources Code) under Section 21080 of the Public Resources Code shall comply with this part.

10912. For the purposes of this part, the following terms have the following meanings:
(a) "Project" means any of the following:
(1) A proposed residential development of more than 500 dwelling units.
(2) A proposed shopping center or business establishment employing more than 1,000 persons or having more than 500,000 square feet of floor space.
(3) A proposed commercial office building employing more than 1,000 persons or having more than 250,000 square feet of floor space.
(4) A proposed hotel or motel, or both, having more than 500 rooms.
(5) A proposed industrial, manufacturing, or processing plant, or industrial park planned to house more than 1,000 persons, occupying more than 40 acres of land, or having more than 650,000 square feet of floor area.

(6) A mixed-use project that includes one or more of the projects specified in this subdivision.
(7) A project that would demand an amount of water equivalent to, or greater than, the amount of water required by a 500 dwelling unit project.

The Project is entitled the Santa Rosa Downtown Station Area Specific Plan Update. The City Planning and Economic Development Department (PED) has determined that the Project is subject to CEQA. As shown in **Table 1** and discussed in **Section 1.5** of this WSA, the Project includes the following net increase or decrease of development from the General Plan 2035:

Table 1 – Net Increase or Decrease in Proposed Project Development [a]

Category	Units	Square Feet
Detached residential	78	N/A
Attached residential	7,321	N/A
Office space	N/A	-214,396
Commercial/retail	N/A	1,259,481
Public/Institutional (Service)	N/A	555,669
General industrial	N/A	-169,046
Total	7,399	1,431,708

[a] Source: Table 4, Woodard & Curran, Technical Memorandum, Supply and Demand Projections for the Water Supply Assessment for the Santa Rosa Downtown Station Area Specific Plan Update, January 22, 2020.

Since the Project is subject to CEQA and includes an overall net increase in development that meets or exceeds the criteria set forth in Water Code Section 10912(a), it qualifies as a "project" and is subject to the requirements of SB 610.

1.2.2 Public Water System Identified

California Water Code:
10910 (b) The city or county, at the time that it determines whether an environmental impact report, a negative declaration, or a mitigated negative declaration is required for any project subject to the California Environmental Quality Act pursuant to Section 21080.1 of the Public Resources Code, shall identify any water system whose service area includes the project site and any water system adjacent to the project site that is, or may become as a result of supplying water to the project identified pursuant to this subdivision, a public water system, as defined in Section 10912, that may supply water for the project. If the city or county is not able to identify any public water system that may supply water for the project, the city or county shall prepare the water assessment required by this part after consulting with any entity serving domestic water supplies whose service area includes the project site, the local agency formation commission, and any public water system adjacent to the project site.

10912 (b) If a public water system has fewer than 5,000 service connections, then "project" means any proposed residential, business, commercial, hotel or motel, or industrial development that would account for an increase of 10 percent or more in the number of the public water system's existing service connections, or a mixed-use project that would demand an amount of water equivalent to, or greater than, the amount of water required by residential development that would represent an increase of 10 percent or more in the number of the public water system's existing service connections.
(c) "Public water system" means a system for the provision of piped water to the public for human consumption that has 3,000 or more service connections. A public water system includes all of the following:
(1) Any collection, treatment, storage, and distribution facility under control of the operator of the system that is used primarily in connection with the system.
(2) Any collection or pretreatment storage facility not under the control of the operator that is used primarily in connection with the system.
(3) Any person who treats water on behalf of one or more public water systems for the purpose of rendering it safe for human consumption.

The City of Santa Rosa Water Department operates the public water system that provides water supply to the Project area. The City also owns and operates the Regional Water Reuse System (Regional System), which provides recycled water to the City's service area.

1.2.3 Requirement for Submittal of Assessment

California Water Code
10910 (g) (1) Subject to paragraph (2), the governing body of each public water system shall submit the assessment to the city or county not later than 90 days from the date on which the request was received. The governing body of each public water system, or the city or county if either is required to comply with this act pursuant to subdivision (b), shall approve the assessment prepared pursuant to this section at a regular or special meeting.
(2) Prior to the expiration of the 90-day period, if the public water system intends to request an extension of time to prepare and adopt the assessment, the public water system shall meet with the city or county to request an extension of time, which shall not exceed 30 days, to prepare and adopt the assessment.
(3) If the public water system fails to request an extension of time, or fails to submit the assessment notwithstanding the extension of time granted pursuant to paragraph (2), the city or county may seek a writ of mandamus to compel the governing body of the public water system to comply with the requirements of this part relating to the submission of the water supply assessment.
(h) Notwithstanding any other provision of this part, if a project has been the subject of a water supply assessment that complies with the requirements of this part, no additional water supply assessment shall be required for subsequent projects that were part of a larger project for which a water supply assessment was completed and that has complied with the requirements of this part and for which the public water system, or the city or county if either is required to comply with this part pursuant to subdivision (b), has concluded that its water supplies are sufficient to meet the projected water demand associated with the proposed project, in addition to the existing and planned future uses, including, but not limited to, agricultural and industrial uses, unless one or more of the following changes occurs:
(1) Changes in the project that result in a substantial increase in water demand for the project.
(2) Changes in the circumstances or conditions substantially affecting the ability of the public water system, or the city or county if either is required to comply with this part pursuant to subdivision (b), to provide a sufficient supply of water for the project.
(3) Significant new information becomes available that was not known and could not have been known at the time when the assessment was prepared.

An earlier version of the Project, entitled the 2007 Downtown Station Area Specific Plan (2007 DSASP) was the subject of a WSA which amended the General Plan 2035. The City is updating the 2007 DSASP to address the community's housing needs as well as land use, transportation, economic development, and historic preservation issues associated with the intensification of housing development downtown. The current proposed Project updates planned development proposed in the 2007 DSASP.

PED is the land use planning agency for the Project. PED made a request of the City Water Department to prepare this WSA for the Project on December 12, 2019. This WSA was approved by the Santa Rosa City Council on _____. The approved WSA was submitted to PED on _____. Because the WSA was submitted to PED in less than 90 days, the pubic water system has met the requirement of this section.

1.2.4 Project Description

The Project will be described in full in the Project Draft Environmental Impact Report. A brief description of the Project, as provided by PED, and a location map follow (**Figure 1**). The proposed Project covers an area of approximately 650 acres (Plan Area) surrounding the Downtown Sonoma-Marin Area Rail Transit (SMART) station in the heart of Santa Rosa, as shown in **Figure 1**. The Plan Area extends approximately one-half mile in all directions from the Downtown Station site and is bounded by College Avenue to the north, E Street to the east, Sebastopol Road and Highway 12 to the south, and Dutton Avenue and Imwalle Gardens to the west. The Plan Area will include a one-half mile radius of the Downtown Transit Mall, in addition to the Downtown SMART station, and will extend the Plan Area boundary east to

Brookwood Avenue. The Plan Area encompasses several established areas, including Historic Railroad Square, Courthouse Square, government and conference centers, and several residential neighborhoods.

The Project development plan includes a mix of residential, business, retail, industrial and mixed-use land use potential on strategic sites that could enhance the area and take advantage of the employment opportunities in businesses operating within the Plan Area. The total buildout potential presented in **Table 2** accommodates 9,444 dwelling units and 6,069,214 square feet of development which will generate additional water demand from indoor and outdoor uses.[1]

Table 2 – Total Potential Buildout of the Project [a]

Opportunity Area	Housing Units [b]	Offices (square feet)	Retail (square feet)	Service (square feet)	Industrial (square feet)	Total (square feet)
Courthouse Square	3,214	1,110,339	1,444,441	573,515	0	3,128,295
Santa Rosa Avenue	154	43,118	65,891	67,275	0	176,284
Roberts Avenue	1,209	0	47,782	25,500	44,116	117,398
SMART Station	823	166,219	189,981	98,467	53,610	508,277
Imwalle/3rd Street	246	0	0	6,300	22,193	28,493
Wilson Donahue	361	0	36,246	10,200	0	46,446
Maxwell Court	1,186	0	50,594	12,728	277,562	340,884
Other	2,251	599,665	718,132	260,564	144,776	1,723,137
Total	9,444	1,919,341	2,553,067	1,054,549	542,257	6,069,214

[a] Source: Dyett & Bhatia, Draft Preferred Plan Concept: Santa Rosa Downtown Station Area Plan Update, Nov. 2019.
[b] All projected dwelling units are assumed to be multi-family, except 78 units in the Imwalle/3rd St Opportunity area.

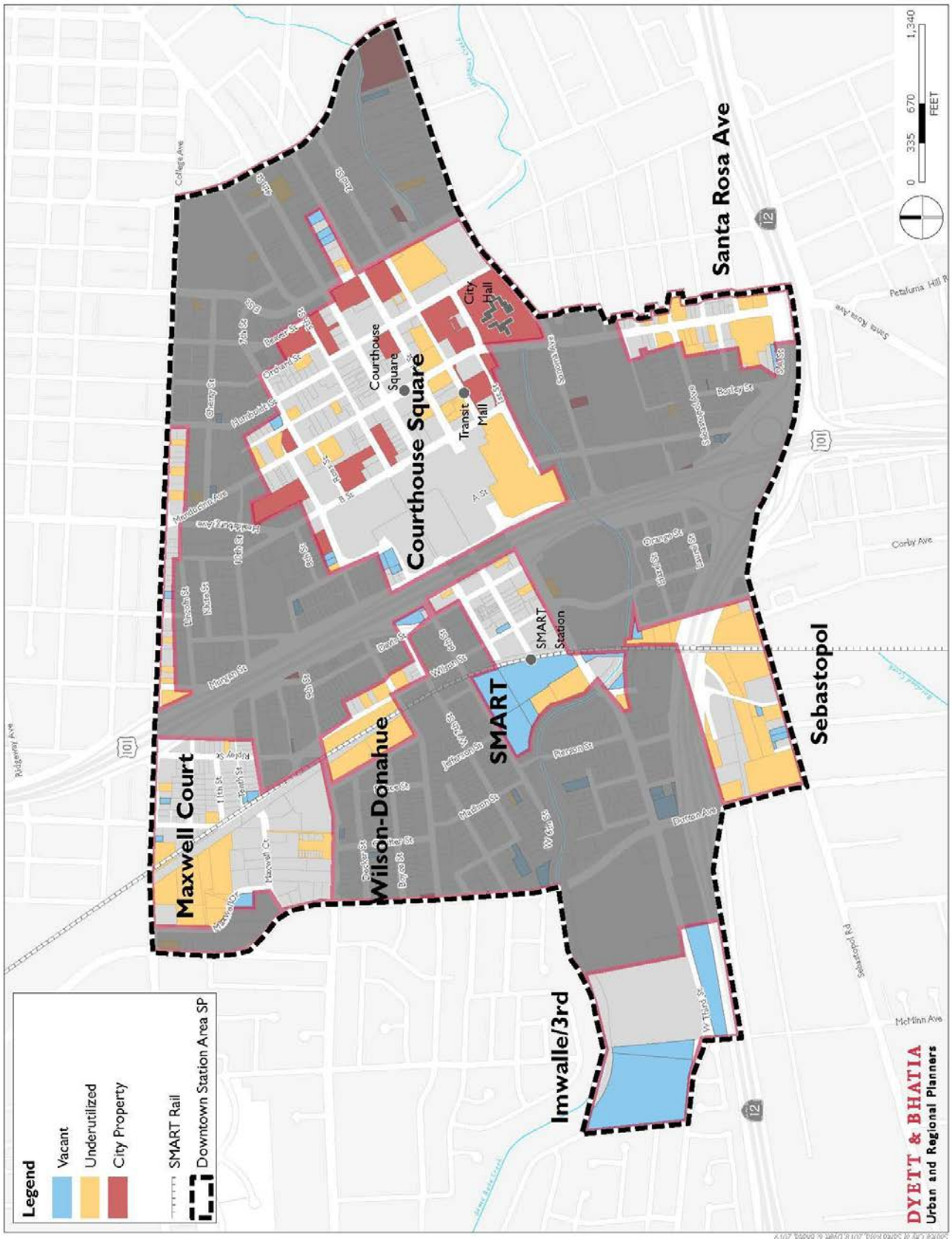
This WSA deals only with the incremental change in developed land use as a result of the proposed Project compared to the General Plan 2035, as amended by the 2007 DSASP, as shown in **Table 1**. Therefore, the Project water demand analyzed in this WSA is the increment of increased projected water demand compared to that described in the 2007 DSASP which amended the General Plan 2035. The incremental change in demand is discussed in **Section 1.5** of this WSA.

1.3 Urban Water Management Plan and Other Resources

California Water Code
10910 (c) (1) The city or county, at the time it makes the determination required under Section 21080.1 of the Public Resources Code, shall request each public water system identified pursuant to subdivision (b) to determine whether the projected water demand associated with a proposed project was included as part of the most recently adopted urban water management plan adopted pursuant to Part 2.6 (commencing with Section 10610).
(2) If the projected water demand associated with the proposed project was accounted for in the most recently adopted urban water management plan, the public water system may incorporate the requested information from the urban water management plan in preparing the elements of the assessment required to comply with subdivisions (d), (e), (f), and (g).
(3) If the projected water demand associated with the proposed project was not accounted for in the most recently adopted urban water management plan, or the public water system has no urban water management plan, the water supply assessment for the project shall include a discussion with regard to whether the public water system's total projected water supplies available during normal, single dry, and multiple dry water years during a 20-year projection will meet the projected water demand associated with the proposed project, in addition to the public water system's existing and planned future uses, including agricultural and manufacturing uses.

[1] Dyett & Bhatia, Draft Preferred Plan Concept: Santa Rosa Downtown Station Area Plan Update, November 2019.

Figure 1: Project Area Map



In accordance with the California Urban Water Management Planning Act (Act), the City adopted its 2015 Urban Water Management Plan (City 2015 UWMP) on June 14, 2016. As required by the Act, the City 2015 UWMP includes projected water supplies required to meet future demands. Though the Act only required supply and demand projections through 2035, the City 2015 UWMP provides supply and demand projections through 2040. Information from the City 2015 UWMP is the basis for the elements of this WSA addressing demands and supplies from all sources of water.

The City 2015 UWMP included demand projections through buildout of the City's General Plan 2035, including the 2007 DSASP. The demand projections in the City 2015 UWMP were based on an analysis performed by Maddaus Water Management included in Appendix E of the City 2015 UWMP. The demand projection for the Project in this WSA is for an increase in development not accounted for in the City 2015 UWMP. The total Project water demand projection is 1,845 AFY at buildout, with a net increase in water demand from the General Plan 2035 of 870 AFY. Project water demand was calculated as described in **Section 1.5** of this WSA.

The City 2015 UWMP water demand projections and the Project water demand projections are the bases for the demand assessment in this WSA. The City 2015 UWMP single- and multiple-dry year supply analysis and the Sonoma Water 2015 UWMP are the sources for the dry year evaluations of this WSA.

1.4 Existing Supplies

California Water Code:
10910 (d) (1) The assessment required by this section shall include an identification of any existing water supply entitlements, water rights, or water service contracts relevant to the identified water supply for the proposed project, and a description of the quantities of water received in prior years by the public water system, or the city or county if either is required to comply with this part pursuant to subdivision (b), under the existing water supply entitlements, water rights, or water service contracts.
(2) An identification of existing water supply entitlements, water rights, or water service contracts held by the public water system, or the city or county if either is required to comply with this part pursuant to subdivision (b), shall be demonstrated by providing information related to all of the following:
(A) Written contracts or other proof of entitlement to an identified water supply.
(B) Copies of a capital outlay program for financing the delivery of a water supply that has been adopted by the public water system.
(C) Federal, state, and local permits for construction of necessary infrastructure associated with delivering the water supply.
(D) Any necessary regulatory approvals that are required in order to be able to convey or deliver the water supply.

1.4.1 Water Supply Overview

The City currently has three sources of existing water supply which serve the Project area: 29,100 AFY entitlement from Sonoma Water, 2,300 AFY of groundwater from the City's wells, and approximately 140 AFY of recycled water from the City's Regional System. In addition, the City has a very successful water conservation program which has reduced current demands sustainably and will help assure that future water demands will not exceed supply.

Santa Rosa currently receives the majority of its potable water supply from Sonoma Water under the provisions of the Restructured Agreement for Water Supply (Restructured Agreement), which was executed in June 2006; approximately 99 percent of water delivered by Sonoma Water is from surface water sources, with the remainder from groundwater.[2] In addition to Sonoma Water supply, the City has two groundwater wells that can provide up to 2,300 AFY to the City. The City is also the owner and

[2] Email from Marcus Trotta, Principal Geologist, Sonoma County Water Agency, January 28, 2020.

operator of the Regional System, which produces recycled water. The City has historically used approximately 140 AFY of recycled water for urban landscape irrigation.

Table 3 shows actual water usage for 2018 and projected water supplies for 2020-2040 (in five-year increments) based on Table 6-13 of the City 2015 UWMP to illustrate the projected volumes of water available for use by the City in a normal water year, by source of supply through 2040. To be conservative, the City 2015 UWMP does not use 2009, 2014, and 2015 as representative water years in the demand projection analysis because the City had implemented its Water Shortage Contingency Plan in those years.

Table 3 – Existing and Planned Water Supplies (AFY)

Water Supply Sources	2018 actual usage	2020	2025	2030	2035	2040
Sonoma Water [a]	16,256	29,100	29,100	29,100	29,100	29,100
City produced groundwater [b]	0	2,300	2,300	2,300	2,300	2,300
Recycled water [c]	140	140	140	140	140	140
Total	16,396	31,540	31,540	31,540	31,540	31,540

[a] Water supplied from Sonoma Water is based on current Restructured Agreement Entitlement.
[b] Based on Santa Rosa Groundwater Master Plan Mitigated Negative Declaration (GHD, September 11, 2013). In 2018 the City's two groundwater production wells were offline for pump replacement.
[c] Recycled water supply shown is for urban use only (not agricultural) and represents the existing system.

The following sections describe the City's existing supply sources: Sonoma Water contractual entitlement, City groundwater, and recycled water. Supply for the Project will be met with existing sources.

1.4.2 Existing Wholesale Water Supply – Sonoma Water

The City receives the majority of its potable water supply from Sonoma Water. Sonoma Water is authorized to produce and deliver potable water for municipal and industrial purposes, to prevent the waste or diminution of water supplies, to control and conserve flood and storm waters to reduce potential damage to life and property, to provide sanitary sewage services, and to provide recreational services in connection with flood control and water conservation activities. Sonoma Water operates under direction of a Board of Directors that consists of the Sonoma County Board of Supervisors.

Sonoma Water delivers water on a wholesale basis to customers through its water transmission system. The primary water customers, collectively known as the Water Contractors, consist of the cities of Santa Rosa, Rohnert Park, Petaluma, Cotati, and Sonoma; the Town of Windsor; and the North Marin and Valley of the Moon Water Districts. The responsibility of supplying water to the Water Contractors is entrusted to Sonoma Water under the Restructured Agreement, which was executed in June 2006. Sonoma Water also provides water on a wholesale basis to and has authorized the exercise of its water rights by additional water purveyors, including but not limited to Marin Municipal Water District, the Forestville Water District, and California-American, Lawndale Mutual, Penngrove, and Kenwood Water Companies.

Sonoma Water's primary source of supply is the Russian River. Sonoma Water manages water releases at Coyote Valley Dam (commonly referred to as Coyote Dam), which creates Lake Mendocino on the East Fork of the Russian River, and at Warm Springs Dam, which creates Lake Sonoma on Dry Creek (a

tributary to the Russian River), to provide water supply and to maintain required minimum flows in the Russian River and Dry Creek. Flood control releases from Coyote Valley Dam are controlled by the United States Army Corps of Engineers (USACE). Flows in the Russian River are augmented by Pacific Gas & Electric Company's (PG&E) Potter Valley Project (PVP), which diverts a portion of the Eel River flows to the East Fork of the Russian River.

Sonoma Water diverts surface water from the Russian River and delivers it to its customers through a transmission system. These diversion facilities extract Russian River underflow, which is reported under Sonoma Water's surface water rights. Sonoma Water operates six radial collector wells adjacent to the Russian River (three at the Wohler production facility and three at the Mirabel production facility). Sonoma Water enhances production capacity during peak demand months by raising an inflatable dam on the Russian River near Mirabel that allows for operation of five infiltration ponds at Mirabel that increase the area of infiltration along the Russian River. Water pools behind the inflatable dam and is diverted into the infiltration ponds to recharge the aquifer in the vicinity of the Mirabel collectors. Backwater conditions along the river also result in increased infiltration in the Wohler area, thereby enhancing the production capacity of those collectors.

Sonoma Water holds appropriative water rights to Russian River and Dry Creek water by virtue of an assignment to Sonoma Water of Sonoma County's portion of the 1949 application to the State of California for the Coyote Valley Dam Project appropriative water rights and Sonoma Water's 1960 application for the Warm Springs Dam Project appropriative water rights. Four State Water Resources Control Board (State Water Board) permits[3] currently authorize Sonoma Water to store water in Lake Mendocino (up to 122,500 acre-feet (AF)) and Lake Sonoma (up to 245,000 AF) and to divert and redivert 180 cubic feet per second (cfs) of water from the Russian River, up to 75,000 AFY.

The permits also establish minimum instream flow requirements for fish and wildlife protection and Russian River recreational considerations. These minimum instream flow requirements vary according to the hydrologic cycle (i.e., dry water years versus normal water years) defined by the State Water Board's Decision 1610. Sonoma Water meets the various instream flow requirements set by Decision 1610 by making releases from Coyote Valley Dam and Warm Springs Dam. As required by the Biological Opinion, Sonoma Water has applied to the State Water Board to make changes to the minimum instream flow requirements of Decision 1610. The Biological Opinion requirements are discussed in **Section 1.4.3.1** of this WSA.

Sonoma Water also has three deep-water wells that provide water supply. They are located near the Laguna de Santa Rosa and feed directly into Sonoma Water's Russian River-Cotati Intertie Pipeline. Sonoma Water estimates the future production capacity of these wells at 2,300 AFY.

The Restructured Agreement provides for the finance, construction, and operation of existing and new diversion facilities, transmission lines, storage tanks, booster pumps, conventional wells, and appurtenant facilities. The Restructured Agreement currently provides the contractual relationship between Sonoma Water and the City and includes specific rates of delivery and maximum amounts of water that Sonoma Water is obligated to supply the City. The Restructured Agreement defines the City's entitlements as 29,100 AFY and an average of 40.0 million gallons per day (mgd) from Reach 1, 2 and 3a of the Intertie Aqueduct, 40.0 mgd from the Santa Rosa Aqueduct, 4.0 mgd from the Sonoma Aqueduct, or a maximum combined average total of 56.6 mgd for a one-month period from all aqueducts.

[3] State Water Board Permit Numbers 12947A, 12949, 12950, and 16596.

Though the City's existing supply from Sonoma Water is relatively reliable, the Restructured Agreement contains shortage provisions defined in Section 3.5 of that agreement. The shortage provisions are further defined in the Water Shortage Allocation Methodology (Shortage Methodology), which was adopted by the Sonoma Water Board in April 2006.[4] The Restructured Agreement Section 3.5 provisions and the Shortage Methodology are designed to take the demand hardening associated with water conservation into account. The City has implemented an aggressive water conservation program over the past 25 years and has one of the lowest per capita water uses among all Sonoma Water customers. This is recognized by the Shortage Methodology, which encourages water conservation. Under the Shortage Methodology, if Sonoma Water surface water rights and Russian River supply remain limited to 75,000 AFY and the Water Contractors' total demands reach Sonoma Water's 75,000 AFY available supply, then the City's allocation would still be 29,100 AFY, the City's full entitlement under the Restructured Agreement.[5]

1.4.3 Conditions Which Could Affect Sonoma Water Supply

The following conditions, discussed in detail below, could affect the City's long-term sustainable water supply available from Sonoma Water:

- Threatened and Endangered Species - Biological Opinion
- Future operation of the Potter Valley Project

1.4.3.1 Threatened and Endangered Species – Biological Opinion

On October 31, 1996, the National Marine Fisheries Service (NMFS) published a final notice of determination listing coho salmon as threatened under the federal Endangered Species Act (ESA) within the Central California Coast Evolutionarily Significant Unit (ESU), which includes the Russian River. On August 18, 1997, NMFS published a final notice of determination listing steelhead as threatened under the ESA within the Central California Coast ESU, also including the Russian River. On September 16, 1999, NMFS listed the California Coast ESU of Chinook salmon as threatened.

In accordance with Section 7(a) (2) of the ESA, federal agencies must consult with the United States Fish and Wildlife Service and/or NMFS (depending on the species) to "ensure that any action authorized, funded, or carried out by such agency is not likely to jeopardize the continued existence of any listed species or result in the destruction or adverse modification of designated critical habitat…." (50 CFR §402). The operation of Warm Springs and Coyote Valley dams and Sonoma Water's rubber dam and fish screens all fall within the provisions of Section 7 of the ESA. In December 1997, the USACE, as the federal sponsor of the above two flood control and water supply projects, and Sonoma Water, as the local sponsor, entered into a Memorandum of Understanding with NMFS to begin the Section 7 consultation process. As part of the Section 7 consultation, a Biological Assessment was prepared to study the impact of current and potential future operations of facilities on the listed species in the Russian River. The final Biological Assessment was completed in September 2004.

As part of the Section 7 consultation process, the NMFS formed Biological Review Teams to conduct a status review of the three listed fish species by assembling the best available information on the condition of the fish species and quantifying risks faced by each ESU. Using the results of the status

[4] John O. Nelson Report, April 2006.
[5] Letter from Sonoma County Board of Supervisors, April 2006.

review, NMFS reevaluated the listing of the three fish species. On June 28, 2005, NMFS issued a final rule listing the status of coho as endangered and maintaining the threatened status of California Coast Chinook salmon. On January 5, 2006, NMFS issued a final determination listing the steelhead as threatened.[6]

On September 24, 2008, NMFS issued the Biological Opinion. The Biological Opinion analyzed the impacts of the current operation of the Warm Springs and Coyote Valley Dams as well as other facilities operated by the USACE, Sonoma Water, and the Russian River Flood Control and Water Conservation Improvement District in the Russian River Watershed for the next fifteen years. The Biological Opinion determined that the continued operation of some aspects of the flood control and water supply operations will have substantial adverse effects on both the coho salmon and steelhead but are not likely to impact the survival and recovery of the Chinook salmon in the Russian River. The three areas of most concern are the high summertime flows in the Russian River and Dry Creek, the high velocity of water in Dry Creek in the summer, and the current practice of breaching the sandbar at the estuary during the summer months.[7]

NMFS collaborated with the USACE and Sonoma Water to develop a Reasonable and Prudent Alternative, including eight Reasonable and Prudent Measures (RPMs), to implement over a 15-year timeframe to avoid jeopardy to the coho salmon and steelhead. The RPMs include the following: interim and permanent changes to the summertime flows in the Russian River and Dry Creek; changing the management of the Jenner estuary; restoring fish habitat along Dry Creek; conducting a feasibility study of constructing a pipeline to deliver water from Lake Sonoma to the mainstem of the Russian River; strengthening and expansion of the existing coho broodstock program; installation of a new back-up water supply pipeline to the Warm Springs Hatchery and construction of additional rearing facilities for the coho broodstock program; and monitoring of habitat and fish in the Russian River, Dry Creek, and the Jenner estuary.

Fish habitat restoration work and monitoring have been steadily implemented, under review by NMFS. On October 4, 2018, NMFS reported in a letter to USACE that implementation of Dry Creek habitat restoration work has been "tremendously successful to date" and has allowed "critical water supply and dam safety operations to continue unconstrained while also producing demonstrable benefits to the three ESA-listed salmonid species that inhabit the watershed." [8]

The Biological Opinion also provides an Incidental Take Statement for the taking of the coho, steelhead and Chinook that may occur due to the implementation of the continued operations of the flood control and water supply operations and the associated RPMs.

The Biological Opinion requires the following temporary and permanent changes to the minimum instream flows in the Russian River and Dry Creek:

[6] National Marine Fisheries Service, Southwest Region, Biological Opinion for Water Supply, Flood Control Operations, and Channel Maintenance conducted by the U.S. Army Corps of Engineers, the Sonoma County Water Agency, and the Mendocino County Russian River Flood Control and Water Conservation Improvement District in the Russian River watershed, September 24, 2008.

[7] Sonoma County Water Agency, Russian River Instream Flow and Restoration, The Biological Opinion: Frequently Asked Questions, October 2008.

[8] Letter from Sam Rauch, Deputy Assistant Administrator for Regulatory Program, National Marine Fisheries Service, to Lt. General Todd Semonite, Chief of Engineers, and James Dalton, Director of Civil Works, United States Army Corps of Engineers, October 4, 2018.

During Normal Years

- Reduce the minimum flow requirement for the Russian River from the East Fork to Dry Creek from 185 cfs to 125 cfs between June 1 and August 31; and from 150 cfs to 125 cfs between September 1 and October 31.
- Reduce the minimum flow requirement for the Russian River between the mouth of Dry Creek and the mouth of the Russian River from 125 cfs to 70 cfs.
- Reduce the minimum flow requirement for Dry Creek from Warm Springs Dam to the Russian River from 80 cfs to 40 cfs from May 1 to October 31.

During Dry Years:

- Reduce the minimum flow requirement for the Russian River between the mouth of Dry Creek and the mouth of the Russian River from 85 cfs to 70 cfs.

In September 2009, Sonoma Water filed a petition with the State Water Board to permanently change the minimum instream flow requirements as outlined by the Biological Opinion. The petition is currently pending at the State Water Board and will not be acted on until Sonoma Water has completed compliance with CEQA. Until the petition is acted upon by the State Water Board, Sonoma Water will have to annually file a Temporary Urgency Change petition with the State Water Board to reduce the minimum instream flows during the months of May through October as required by the Biological Opinion.

The reduced flows required by the RPMs would provide enough water for Sonoma Water to meet existing water demands. The RPMs allow for restoration of fish habitat in Dry Creek to continue flows of 130 to 175 cfs to meet the water demands of Sonoma Water.[9] However, the Biological Opinion clarified that, if the restoration work was not sufficiently effective, Sonoma Water would have to explore other alternatives, including a bypass pipeline. Sonoma Water released a draft feasibility study of a bypass pipeline in April 2011 and a final study report on September 15, 2011.

As described in Sonoma Water's 2015 UWMP, Sonoma Water assumes that the Biological Opinion will remain in effect and that actions required by (and be subject to the restrictions set forth in) the Biological Opinion will be completed. Sonoma Water also assumes that it will engage in a new Section 7 consultation with NMFS and USACE and that a new Biological Opinion will be issued in the future. In its 2015 UWMP, Sonoma Water states that while "the Biological Opinion is only in effect until 2023, Sonoma Water is, for planning purposes, assuming that the requirements, terms and conditions in the existing Biological Opinion will continue to be applicable through 2040. Furthermore Sonoma Water's 2015 UWMP states, "although it is likely that any future consultation and new Biological Opinion will have provisions that differ from the existing Biological Opinion, it is impossible for [Sonoma Water] to guess what new provisions might be added in future consultations. Moreover, given the long history of coordination and cooperation between [Sonoma Water], USACE, NMFS, and CDFW, [Sonoma Water] reasonably assumes that any changes to the Biological Opinion will not affect [Sonoma Water's] ability to deliver the quantities of water from its transmission system projected in this Plan." [10] This WSA similarly assumes that the requirements, terms and conditions in the existing Biological Opinion will continue to be applicable through 2040 such that supply availability is similar to current conditions.

[9] Sonoma County Water Agency, October 2008.
[10] Sonoma County Water Agency, 2015 Urban Water Management Plan, June 2016.

In August of 2016, Sonoma Water released the Fish Habitat Flows and Water Rights Project (Fish Flow Project) Draft Environmental Impact Report (DEIR) for public review. The Fish Flow Project objectives include managing Lake Mendocino and Lake Sonoma water supply releases to provide instream flows that improve habitat for threatened and endangered fish species and updating Sonoma Water's existing water rights to reflect current conditions. The Fish Flow Project would change Sonoma Water's water right permits related to flows and diversions from the Russian River and Dry Creek. The new minimum instream flow requirements proposed by the Fish Flow Project were developed to meet the requirements of the Biological Opinion to improve habitat for threatened and endangered salmonid species. The Fish Flow Project does not propose to increase or otherwise change the quantities of surface water that Sonoma Water diverts under its water right permits, to obtain any new authorizations for new rights, or to construct new facilities.[11] In response to release of the Draft EIR, Sonoma Water received numerous comment letters from the public and resource agencies. Sonoma Water plans to recirculate the Draft EIR in late 2020 and finalize it in 2021. [12]

1.4.3.2 Future Operation of the Potter Valley Project

Diversions from the Eel River into the Russian River via PG&E's Potter Valley Project (PVP) are regulated by a number of agencies including the Federal Energy Regulatory Commission (FERC) and NMFS. The Eel River water is diverted through an inter-watershed tunnel to PG&E's hydroelectric facility in Potter Valley. Thereafter, the water flows down the east fork of the Russian River, is stored in Lake Mendocino, and is released to augment summer flows and maintain minimum instream flow requirements in the Russian River.

From 1908 to 1999, an estimated 160,000 AFY was diverted from the Eel River to the Russian River as a result of the operation of the PG&E PVP. A new license issued by the FERC to PG&E for the PVP in 1983 required PG&E, in cooperation with the California Department of Fish and Game (CDFG, now the California Department of Fish and Wildlife or CDFW), to carry out a 10-year fish monitoring study in cooperation with NMFS. After completion of the study, a proposed flow schedule reducing Eel River diversions to the Russian River by approximately 15 percent (in an effort to improve Eel River fisheries) was submitted to FERC. PG&E had been voluntarily implementing the recommended flow schedule since the summer of 1999. An Environmental Impact Statement (EIS) that presented the impacts of two proposed flow schedules was released in 1999. Since that time, other proposals have been submitted for FERC's consideration.

In April 1999, as an alternative to the PG&E/FERC proposal, the Department of Interior and NMFS jointly submitted a flow proposal which would result in lower PVP imports to the Russian River. In May 2000 FERC issued its final EIS recommending the PG&E flow proposal with Potter Valley Irrigation District modifications. In June 2004, FERC issued its final order on the flow regime based upon a Biological Opinion for the PVP issued by NMFS. The FERC order supported an approximately 15 percent reduction in summer flows and was close to the voluntary flow schedule that had been in place since the summer of 1999.

In August 2006, NMFS and CDFW filed concerns with FERC regarding PG&E's implementation of the flow regime. On October 16, 2006, PG&E sent a letter to FERC acknowledging three errors in the implementation of the flow regime and associated flow requirements of the Biological Opinion

[11] Sonoma County Water Agency, Fish Habitat Flows and Water Rights Project Draft Environmental Impact Report, August 2016.
[12] Email from Jessica Martini Lamb, Environmental Resources Manager, Sonoma County Water Agency, January 28, 2020.

Reasonable and Prudent Alternative. In response, PG&E has adjusted implementation of the flow regime, leading to an approximately 33 percent reduction in summer flows through the PVP to the Russian River.[13]

PG&E's license to operate the PVP expires on April 14, 2022. The Sonoma Water 2015 UWMP assumes that PG&E's existing FERC license for the PVP will not be modified, and that a new license will be issued in 2022 or thereafter that will not appreciably change the amount of water discharged from the PVP into the Russian River system. On April 6, 2017, PG&E filed a Notice of Intent (NOI) to relicense the project and a pre-application document (PAD) and initiated the pre-filing steps of the Integrated Licensing Process.

At the request of several interested entities, a PVP Ad Hoc Committee was convened by U.S. Representative Jared Huffman to enable dialogue on the terms of a potential new license. The Ad Hoc Committee is comprised of over 25 federal and state resource agencies, local counties, tribes, and environmental organizations. Participating stakeholders have committed to reaching a "Two-Basin Solution" with co-equal goals of improving fish passage and habitat on the Eel River and minimizing adverse impacts to water supply reliability, fisheries, water quality, and recreation in the Russian River and Eel River basins.

On January 25, 2019, PG&E filed a notice of withdrawal of its NOI and PAD, indicating it was discontinuing efforts to relicense the project. On March 1, 2019, FERC issued a Notice Soliciting Applications for any party interested in filing a license application for a new license, stating any party interested in seeking a new license needed to file an NOI and PAD by July 1, 2019. In May 2019, four parties signed a Planning Agreement to undertake a Feasibility Study of a potential licensing proposal for the PVP. Signatories included California Trout, Inc., the County of Humboldt, Mendocino County Inland Water and Power Commission, and Sonoma County Water Agency. By signing the Planning Agreement, these entities committed to reaching a "Two-Basin Solution" with co-equal goals of improving fish passage and habitat on the Eel River and minimizing adverse impacts to water supply reliability, fisheries, water quality, and recreation in the Russian River and Eel River basins.

On June 28, 2019, parties to the Planning Agreement jointly filed with FERC an NOI to file an application for new license for the PVP. In the NOI they propose to continue the relicensing process initiated by PG&E and indicate they submitted the NOI as proxies for a new regional entity (as yet to be formed) that would ultimately be the license applicant for the project. The NOI states the Planning Agreement parties will work together to complete a feasibility study by April 2020, consult on the need for additional studies, and file a final license application with FERC by April 14, 2022. The feasibility study will evaluate a range of options for the project's future that best meets the needs of water users in both the Eel and Russian River Basins to protect fisheries and water supplies in both basins. Since the filing of the NOI, the Round Valley Indian Tribes have signed the Planning Agreement.

As outlined in the Draft Environmental Impact Report for the Fish Habitat Flows and Water Rights Project, "the historical importance of flows from the Pottery Valley Project on Lake Mendocino water supplies is demonstrated by the fact that the State Water Board's Decision 1610 […] established a hydrologic index for the Russian River and Dry Creek minimum instream flow requirements […] that is based on cumulative inflows into Lake Pillsbury." [14] Should relicensing fail, water supplies downstream of Lake Mendocino could be impacted. To address this question, the Water Supply Working Group, a

[13] PG&E Letter to FERC, October 16, 2006.
[14] Sonoma County Water Agency, 2015 UWMP.

subgroup of the Huffman Ad Hoc Committee, published modeling results in May 2019 that simulate the impact of full PVP decommissioning on Eel River and Current Operations on Russian River (Scenario 1). Results indicate that, if there are no longer any diversions from the Eel River to the Russian River, inflows to Lake Mendocino and storage in Lake Mendocino would be consistently lower than current baseline operations.[15] The study found that flows downstream of Lake Mendocino would be "slightly lower than baseline operations in January and February (<10 cfs), nearly the same in March, April, and May, and again lower (approximately 40 cfs to 50 cfs) for the balance of the year (June-December). During drier water years (75% exceedance and higher), flows in the Russian River could decrease below 10 cfs in late summer through October". The report concluded that this outcome does not meet the Two Basin solution goals, one of which is minimizing or avoiding adverse impacts to water supply reliability.[16]

There is still uncertainty around if or how the PVP will operate in the future. However, given the fact that a concerted multi-agency and State supported effort is underway to achieve a successful two-basin solution for the PVP, there is some confidence that the associated water supply issues will be adequately addressed. If relicensing should fail, decommissioning the PVP will likely take upwards of 20 years or longer. As this WSA requires an assessment of water supply sufficiency for 20 years, this WSA assumes the PVP proceedings will not have an impact during the term of this WSA.[17] While decommissioning the PVP could potentially eventually impact the City's water supply, there are many other options being considered that would help offset this outcome, including modeling scenarios run by the Water Supply Modeling Subgroup, a subcommittee of the Huffman Ad Hoc Committee. Results for the modeling scenarios can be found in a report prepared by the Huffman Ad Hoc Committee entitled *Results of Initial Water Supply Modeling for Potter Valley Project and Russian River Alternatives Report*.[18]

1.4.4 Groundwater

California Water Code
10910 (f) If a water supply for a proposed project includes groundwater, the following additional information shall be included in the water supply assessment:
(1) A review of any information contained in the urban water management plan relevant to the identified water supply for the proposed project.
(2) (A) A description of any groundwater basin or basins from which the proposed project will be supplied.
(B) For those basins for which a court or the board has adjudicated the rights to pump groundwater, a copy of the order or decree adopted by the court or the board and a description of the amount of groundwater the public water system, or the city or county if either is required to comply with this part pursuant to subdivision (b), has the legal right to pump under the order or decree.
(C) For a basin that has not been adjudicated that is a basin designated as high- or medium-priority pursuant to Section 10722.4, information regarding the following:
(i) Whether the department has identified the basin as being subject to critical conditions of overdraft pursuant to Section 12924.
(ii) If a groundwater sustainability agency has adopted a groundwater sustainability plan or has an approved alternative, a copy of that alternative or plan.
(D) For a basin that has not been adjudicated that is a basin designated as low- or very low priority pursuant to Section 10722.4, information as to whether the department has identified the basin or basins as overdrafted or has projected that the basin will become overdrafted if present management conditions continue, in the most current bulletin of the department that characterizes the condition of the groundwater basin, and a detailed description by the public water system, or the city or county if either is required to comply with this part pursuant to subdivision (b), of the efforts being undertaken in the basin or basins to eliminate the long-term overdraft condition.

[15] Huffman Ad-Hoc Committee, Pottery Valley Project Water Supply Working Group, Results of Initial Water Supply Modeling for Potter Valley Project and Russian River Alternatives, May 2019.
[16] Ibid.
[17] Woodard & Curran, January 22, 2020.
[18] Huffman Ad-Hoc Committee, May 2019.

(3) A detailed description and analysis of the amount and location of groundwater pumped by the public water system, or the city or county if either is required to comply with this part pursuant to subdivision (b), for the past five years from any groundwater basin from which the proposed project will be supplied. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records.
(4) A detailed description and analysis of the amount and location of groundwater that is projected to be pumped by the public water system, or the city or county if either is required to comply with this part pursuant to subdivision (b), from any basin from which the proposed project will be supplied. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records.
(5) An analysis of the sufficiency of the groundwater from the basin or basins from which the proposed project will be supplied to meet the projected water demand associated with the proposed project. A water supply assessment shall not be required to include the information required by this paragraph if the public water system determines, as part of the review required by paragraph (1), that the sufficiency of groundwater necessary to meet the initial and projected water demand associated with the project was addressed in the description and analysis required by subparagraph (D) of paragraph (4) of subdivision (b) of Section 10631.

Because the water supply for the proposed Project includes groundwater, the following additional information is included in this WSA.

1.4.4.1 City Groundwater Resources

The City is located within the Santa Rosa Plain Sub-basin of the Santa Rosa Valley Groundwater Basin, located at the confluence of the Santa Rosa, Bennett, and Rincon Valleys. By the late 1950's, the City was relying primarily on groundwater from this sub-basin for its water supply, plus a small amount of surface water from Lake Ralphine. In June 1959, Sonoma Water began supplying surface water to the City and other water contractors. By the 1980s and until 2007, the City relied solely on purchased water deliveries from Sonoma Water to meet its water demands. In July 2005, the City received permission from the California Department of Public Health (DPH, now the Division of Drinking Water, or DDW) to change the status of two of its groundwater wells, formerly permitted as standby emergency wells, to full-time active status. These wells are now permitted for regular production of up to 2,300 AFY of potable supply. The City began using them for water supply in 2007. Including these two production wells, the City maintains a total of six municipal groundwater wells within the Santa Rosa Plain Sub-basin.

1.4.4.1.1 Groundwater Basin Description

The City's urban growth boundary overlies portions of two groundwater basins: the Santa Rosa Valley Groundwater Basin (specifically two of its sub-basins: the Santa Rosa Plain Sub-basin and the Rincon Valley Sub-basin) and the Kenwood Valley Groundwater Basin. **Figure 2** shows the urban growth boundaries for multiple municipalities in the Santa Rosa Plan Sub-basin and underlying groundwater basins. Although the City's urban growth boundary overlies portions of the Rincon Valley Sub-basin and the Kenwood Valley Groundwater Basin, the City's groundwater supply is derived exclusively from the Santa Rosa Plain Sub-basin. The City does not currently derive any groundwater supply from the Rincon Valley Sub-basin or the Kenwood Valley Groundwater Basin. Hence, the focus of the following discussion will be on the Santa Rosa Plain Sub-basin. However, for completeness, brief descriptions of the Rincon Valley Sub-basin and the Kenwood Valley Groundwater Basin are also provided. **Table 4** provides an overview of the characteristics of the groundwater basins and sub-basins.

Table 4 – Characteristics of Groundwater Basin/Sub-basins Underlying the City of Santa Rosa Urban Growth Boundary [a, b]

Groundwater Basin Name	Sub-basin Name	DWR Basin Number	Surface Area
Santa Rosa Valley Groundwater Basin [c]	Santa Rosa Plain Sub-basin	1-55.01	80,000 acres (125 square miles)
	Rincon Valley Sub-basin	1-55.03	5,600 acres (9 square miles)
Kenwood Valley Groundwater Basin	None	2-19	5,120 acres (8 square miles)

[a] Source: Department of Water Resources (DWR) Bulletin 118, Groundwater Basin Descriptions, updated February 27, 2004. A proposed basin boundary modification submitted by the City of Sebastopol was approved by DWR in February 2019.

[b] Santa Rosa Plain Groundwater Sustainability Agency, draft Groundwater Sustainability Plan Introduction & Description of Plan Area Sections.

[c] Other sub-basins include the Healdsburg Area and Alexander Valley sub-basins, located north of the City of Santa Rosa. However, because the City of Santa Rosa does not overlie any portion of these sub-basins, they are not included here.

The following groundwater basin descriptions were derived from the Department of Water Resources (DWR) Bulletin 118 (last updated in February 2004)[19], with additional information obtained from:

- Evaluation of Groundwater Resources in Sonoma County Volume 2: Santa Rosa Plain (DWR, 1982)
- Geologic Map of the Santa Rosa Quadrangle (CGS, 1999)
- Santa Rosa Plain Groundwater Sustainability Agency, draft Groundwater Sustainability Plan Introduction & Description of Plan Area Sections (2020)

Santa Rosa Valley Groundwater Basin

The Santa Rosa Valley Groundwater Basin is one of the largest groundwater basins in DWR's North Coast Hydrologic Region and occupies a northwest-trending structural depression in the southern part of the Coast Ranges of Northern California in Sonoma County. This depression divides the Mendocino Range on the west from the Mayacamas and Sonoma Mountains on the east. The Santa Rosa Valley Groundwater Basin has three sub-basins: the Healdsburg Sub-basin, the Santa Rosa Plain Sub-basin, and the Rincon Valley Sub-basin. Neither the Santa Rosa Valley Groundwater Basin, nor any of its sub-basins, are adjudicated groundwater basins. This basin and its sub-basins have not been identified as overdrafted basins and are not anticipated to become overdrafted basins according to DWR Bulletin 118.

As shown on **Figure 2**, the City overlies a portion of the Santa Rosa Plain Sub-basin, the Rincon Valley Sub-basin and the Kenwood Valley Basin. In September 2018, the City of Sebastopol requested a change in the Santa Rosa Plain Sub-basin boundary to include the City of Sebastopol. DWR approved the request in February 2019.

The Santa Rosa Plain Sub-basin (DWR Groundwater Basin Number 1-55.01) covers an area of 80,000 acres, or approximately 125 square miles. It is the largest sub-basin of the Santa Rosa Valley Groundwater Basin and is characterized by low relief with an average ground surface elevation of approximately 145 feet above mean sea level.

The Santa Rosa Plain Sub-basin is approximately 22 miles long and 0.2 miles wide at the northern end; approximately 9 miles wide through the Santa Rosa area; and about 6 miles wide at the south end of the

[19] California Department of Water Resources, February 27, 2004.

plain near the City of Cotati. The Santa Rosa Plain Sub-basin is bounded on the northwest by the Russian River plain approximately one mile south of the City of Healdsburg and the Healdsburg Sub-basin. Mountains of the Mendocino Range flank the remaining western boundary. The southern end of the sub-basin is marked by a series of low hills, which form a drainage divide that separates the Santa Rosa Valley from the Petaluma Valley basin south of Cotati. The eastern sub-basin boundary is formed by the Sonoma Mountains south of Santa Rosa and the Mayacamas Mountains north of Santa Rosa.

The Santa Rosa Plain Sub-basin is drained principally by the Santa Rosa and Mark West Creeks that flow westward into the Laguna de Santa Rosa. The Laguna de Santa Rosa flows northward and discharges into the Russian River. Annual precipitation in the Santa Rosa Plain ranges from approximately 28 inches in the south to about 40 inches in the north.

The Rincon Valley Groundwater Sub-basin (DWR Groundwater Basin 1-55.03) occupies a small north to northwesterly trending structural trough located adjacent to the east side of the Santa Rosa Groundwater Sub-basin. Rincon Valley is approximately seven miles long and has a width that varies from 0.5 to 2.5 miles.

Rincon Valley encompasses an area of 5,600 acres (approximately nine square miles) and is bounded by the Sonoma and Mayacamas Mountains, except to the southeast, where it is bounded by the Kenwood Valley Groundwater Basin, and on the southwest, where it is bounded by the Santa Rosa Plain Groundwater Sub-basin. Rincon Valley is drained by Brush Creek, a tributary of Santa Rosa Creek.

Kenwood Valley Groundwater Basin

The Kenwood Valley Groundwater Basin (DWR Basin Number 2-19) is located east of the Santa Rosa Valley and the City of Santa Rosa in Sonoma County and covers an area of approximately 5,120 acres, or approximately eight square miles. Kenwood Valley occupies a portion of a small north to northwest-trending structural trough located to the southeast of the Rincon Valley Sub-basin. It is not an adjudicated groundwater basin. It has not been identified as an overdrafted basin and is not anticipated to become an overdrafted basin.

The Kenwood Valley Groundwater Basin is approximately four miles long along its eastern edge and varies in width from about one-half to two miles. The majority of the Kenwood Valley Groundwater Basin is bounded by the Napa-Sonoma Volcanic Highlands, except for the northwest side, where the Kenwood Valley is separated from the Rincon Valley Sub-basin by Santa Rosa Creek.

The Kenwood Valley Groundwater Basin is drained by the Santa Rosa and Sonoma Creeks. The principal water-bearing units in this groundwater basin are Alluvium and the Glen Ellen Formation (see descriptions above). This basin is tapped for domestic use by the Kenwood Village Water Company for residents in the Kenwood area.

This basin and its sub-basins have not been identified as overdrafted basins and are not anticipated to become overdrafted basins according to DWR Bulletin 118.

The major geologic formations comprising the Santa Rosa Plain and Rincon Valley Groundwater Sub-basins are, from youngest to oldest, Younger Alluvium, Older Alluvium (alluvial fan deposits), the undifferentiated Glen Ellen, Huichica Formations and related continental deposits, the Sonoma Volcanics, the Wilson Grove (formerly Merced) Formation and the Petaluma Formation. The Tolay Volcanics may also be present in the subsurface. The groundwater sub-basins are floored by low

permeability rocks of the Franciscan Formation. A description of each of these units and their hydrogeologic properties is provided in **Table 5**.

1.4.4.1.2 Groundwater Quality

Groundwater underlying the City's service area generally meets primary and secondary drinking water standards for municipal use. The City's Farmers Lane wells have historically exhibited slightly elevated concentrations of both iron and manganese, exceeding secondary drinking water standards. A treatment system for iron and manganese removal has been constructed at the site of the City's Farmers Lane wells to treat groundwater pumped from Farmers Lane Wells Nos. 1 and 2 before entering the City's distribution system.

Groundwater quality from springs in the Mayacamas Mountains bordering the east side of the basin is a mixed-cation bicarbonate type with low total dissolved solids (TDS).[20] TDS increases with distance from the mountain areas with median values of 330 to 392 milligrams per liter (mg/L) in the uplands and valley storage areas, as defined by the USGS.[21] On the western side of the basin, sodium and bicarbonate are the dominant cation and anion components in water from all depths. Moving south along the western boundary, the shallow waters have magnesium and calcium as the dominant cation and in the deep zone (below 150 feet) sodium dominates. In the vicinity of Windsor, magnesium chloride water is present in the shallow aquifer to a depth of about 100 feet, but in general the water quality is mixed-cation bicarbonate and sodium bicarbonate types.[22,23] In the Santa Rosa area, groundwater at all depths is characterized primarily by sodium and magnesium bicarbonate types. In the Rohnert Park vicinity, groundwater in the deep zone (below 150 feet) is characterized by sodium and calcium bicarbonate type water.[24]

According to a DWR study of the basin, few wells tested for water quality contained constituents over the recommended concentration for drinking water. Many wells produced water with aesthetic problems such as elevated concentrations of iron, manganese, or high hardness. Private well owners questioned about groundwater quality reported many complaints about the color and/or taste of the water. Although high iron, manganese, and hardness have been reported in groundwater for some portions of the Santa Rosa Plain Sub-basin, the overall quality of groundwater in the Santa Rosa Plain Sub-basin is good.[25]

1.4.4.1.3 Groundwater Level Trends

The evaluation of historical groundwater levels in this WSA provides a hydrologic assessment of the condition of the Santa Rosa Plain Sub-basin. Many of the wells evaluated for this WSA have groundwater level data available on either a semi-annual or monthly basis. However, in order to screen out normal seasonal groundwater level fluctuations, only the year-to-year springtime groundwater level measurements have been evaluated. These springtime groundwater level measurements are an indication of the basin's ability to "recover" on an annual basis following typical higher groundwater

[20] U.S. Geological Survey, Hydrologic and Geochemical Characterization of the Santa Rosa Plain Watershed, Sonoma County, California, Nishikawa, Tracy, ed., Scientific Investigations Report 2013–5118, 2013.
[21] Ibid.
[22] California Department of Water Resources, Evaluation of Ground Water Resources in Sonoma County Volume 2: Santa Rosa Plain, DWR Bulletin 118-4, 1982.
[23] U.S. Geological Survey, 2013.
[24] California Department of Water Resources, 1982.
[25] California Department of Water Resources, February 27, 2004.

Figure 2: Location of Major Groundwater Sub-basins

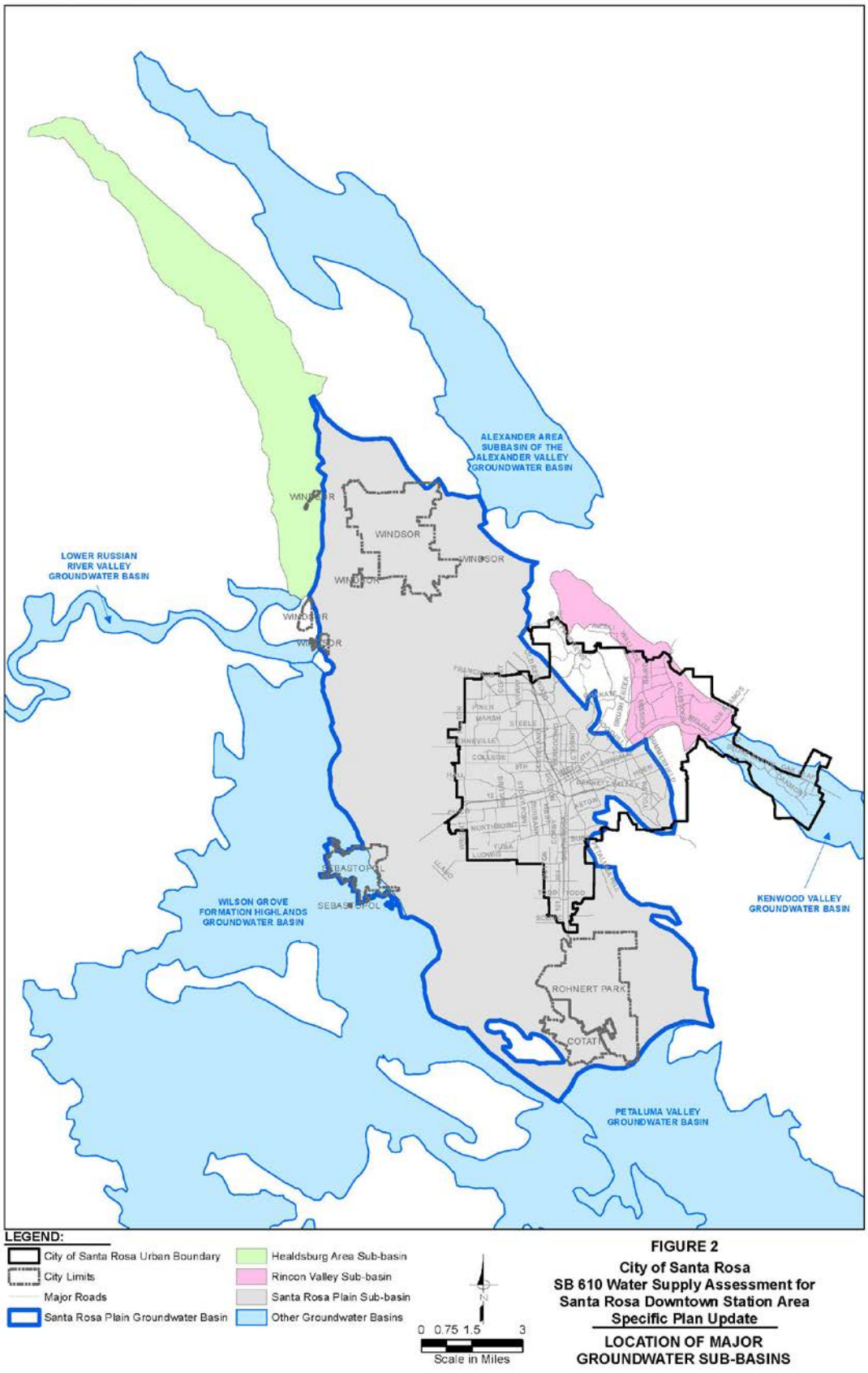


Table 5 – Summary of Geological Units in the Santa Rosa and Rincon Valley Groundwater Sub-basins [a]

Geological Unit	Map Symbol [b]	Lithology	Specific Yield	Comments
Younger Alluvium	Q	Interbedded layers of sand, silt, clay, and gravel	Variable (3-15%)	May contain objectionable levels of iron and manganese above secondary drinking water standards.
Older Alluvium (Alluvial Fan Deposits)	Qo	Fine sand, silt, and silty clay, coarse sand and gravel, with gravel more abundant near fan heads	Moderate to high (8-17%)	Lenses of very fine sand. Minor amounts of methane gas. May contain objectionable levels of iron and manganese above secondary drinking water standards.
Glen Ellen and Huichica Formations and related, undifferentiated continental deposits	QT	Cemented gravel, sand, silt and clay, local interbedded tuff	Low (3-7%)	Generally low yields unless a substantial thickness of coarse gravel and sand is penetrated. May contain objectionable levels of iron and manganese above secondary drinking water standards.
Sonoma Volcanics	Psv	Volcanic flows, agglomerates, and tuffs	Highly Variable (0-15%)	Variable yields. Some water has high boron content. Some waters thermal. Zones of hydrogen sulfide (H_2S). May occasionally exceed secondary drinking water standards for iron and manganese.
Wilson Grove (formerly Merced) Formation	Pwg	Mostly marine coarse-to-fine grained sandstone with minor amounts of clay. Sandstone is typically yellow, gray, or buff-white in surface exposures and distinctively blue in subsurface cuttings.	High (10-20%)	Lenses of very fine sand. Drillers' well logs generally describe this unit as blue sand, blue sandstone, cemented sand, or blue rock with some intervals of blue clay. Zones of high concentration of methane gas. May occasionally exceed secondary drinking water standards for iron and manganese. Water not as hard as other formations.
Petaluma Formation	Pp	Mostly non-marine clay and shale with minor amounts of sandstone	Low (3-7%)	Generally low yields. Yields may be higher for wells penetrating lenses of coarse material. Wilson Grove and Petaluma formations deposited at about the same time – driller's logs indicate alternating layers of blue sandstone and blue clay. Zones of hydrogen sulfide (H_2S). May contain objectionable levels of iron and manganese.
Tolay Volcanics	Ttv	Volcanic flows, tuffs, breccias and agglomerates	Unknown	Variable yields. Fair to good water producer regionally.
Franciscan Complex	KJf	Mélange, including chert, sandstone, shale, greenstone, and serpentinite.	Very low (<3%)	Low yields. Poor quality water in thermal and serpentinite areas. Good quality locally.

[a] Source: Table I in DWR Bulletin 118-4, Evaluation of Ground Water Resources Sonoma County, Volume 2: Santa Rosa Plain (September 1982).

[b] Source: Geologic Map of the Santa Rosa Quadrangle; 1:250,000, California Geological Survey, 1999.

pumpage during the summer months and natural groundwater recharge during the rainy season. If springtime groundwater levels are stable from year to year, this indicates that annual groundwater pumpage is approximately equal to annual groundwater recharge. If springtime groundwater levels are increasing, this indicates that annual groundwater pumpage is less than annual groundwater recharge. Overall, stable or increasing springtime groundwater levels indicate that groundwater extraction is not exceeding recharge, and that the basin is in good condition and is not in overdraft. If springtime groundwater levels are decreasing, this indicates that annual groundwater recharge is less than annual groundwater pumpage. As defined above, long term pumping which exceeds the amount of water that recharges the basin may result in overdraft.

The DWR Bulletin 118 states that the Santa Rosa Plain Sub-basin "as a whole is about in balance, with increased groundwater levels in the northeast contrasting with decreased groundwater levels in the south."[26] Review of spring groundwater levels in wells actively monitored by DWR generally supports these findings, in that a majority of the wells actively monitored by DWR located throughout the sub-basin have demonstrated either increasing or stable groundwater levels, indicating that the sub-basin is in balance and is not being over-drafted. An over-drafted groundwater basin would generally be characterized by groundwater levels that decline over a period of years and never fully recover, even in wet years. This is not the case for the Santa Rosa Plain Sub-basin. Also, all of the actively monitored wells in and around the vicinity of the City have demonstrated either stable or increasing spring groundwater levels.

DWR has historically monitored groundwater levels in approximately 75 wells located within the Santa Rosa Plain Sub-basin and Rincon Valley Sub-basin. This data is available on DWR's on-line Water Data Library.[27] Of these 75 wells, 29 wells are currently actively monitored by DWR on either a semi-annual or monthly basis. Most of these wells have been monitored since 1989, while many have data extending back to the 1970's. One well, Well 06N/08W-15J3, located south of the City near Rohnert Park, has been monitored since 1950. **Figure 3** shows the locations of the DWR-monitored wells, as well as the locations of the City's wells, Sonoma Water's wells and the approximate location and number of other municipal wells located within the Santa Rosa Plain Sub-basin. Hydrographs for the DWR-monitored wells are provided in **Appendix A**. For the wells that are actively monitored by DWR, groundwater level trends are indicated on **Figure 3** by color code. Wells shown in green have demonstrated increasing groundwater levels, wells shown in yellow have demonstrated stable groundwater levels, and wells shown in red have demonstrated declining water levels. As shown, most of the currently monitored wells located throughout the sub-basin have demonstrated either increasing or stable groundwater levels, indicating that the sub-basin is in balance and is not being overdrafted.

Only one of the DWR-monitored wells within the Santa Rosa Plain Sub-basin has had decreasing groundwater levels. This well, designated 06N/08W-15J3 on **Figure 3** and in **Appendix A**, showed a declining trend from the early 1950s through about 1990. Thereafter, groundwater levels stabilized and then began to recover in the late 1990s. However, the well has not been accessible for monitoring since July 2009, and the current groundwater level in the well is unknown. As shown on **Figure 3**, other wells in the area have stable groundwater levels, and it is likely that groundwater levels at 06N/08W-15J3 are also stable.

It should be noted that some of the actively monitored wells show a decline in water levels from 2007 to 2015. This is likely due to the dry hydrologic conditions that occurred in those years, and corresponding

[26] California Department of Water Resources, February 27, 2004.
[27] California Department of Water Resources, Water Data Library, http://wdl.water.ca.gov.

increase in groundwater pumpage by the domestic/rural water users, and municipal users due to a reduction in available supply from Sonoma Water. These groundwater level decreases are considered to be indicative of the normal conjunctive use of the groundwater basin and are representative of the dry year conditions which occurred from 2007 to 2015, and the natural hydrologic cycles that occur over time, and are not considered to be a concern. This natural cycle is further evidenced by the increase in groundwater levels in these wells after 2015, likely as a result of wetter hydrologic conditions and additional supplies being available from Sonoma Water.

Groundwater trend data from the existing monitoring wells located throughout the sub-basin indicate that levels within the main portion of the sub-basin have generally remained constant or have slightly increased over time, indicating that the sub-basin is in balance and is not being over-drafted.[28] In addition, groundwater level data for the City's municipal wells was compared to historical data. For the City's Carley Well, Peters Spring Well, and Farmers Lane Wells Nos. 1, 2 and 3, historical groundwater levels from the 1940's and 1950's were compared to current groundwater levels. Although the available data is limited, the data indicate for each of these wells that static (non-pumping) groundwater levels have increased significantly from 14 to 94 feet below groundwater surface in the 1940's and 1950's to essentially artesian conditions (e.g., groundwater level at or above ground surface). Currently, the City's Farmers Lane Wells Nos. 1 and 2 and Leete Well are demonstrating artesian conditions and water surface elevations in the City's other wells are only a few feet below ground surface, indicating an abundance of groundwater in the portion of the sub-basin underlying the City. Hydrographs of groundwater levels for the City's municipal wells are included in **Appendix B**.

Review of hydrographs near the City's Farmers Lane wells shows that groundwater elevations have been high (within 10 to 30 feet of the ground surface) and stable since at least 1989, indicating that groundwater recharge is taking place and that additional groundwater yield from this area is possible. Groundwater level data collected from the Farmers Lane Wells after the 2007 to 2019 summer pumpage periods shows that water levels quickly recover to artesian conditions after the wells are turned off. The hydrographs indicate that groundwater elevations to the east of the Farmers Lane wells are significantly higher than the ground surface at the Farmers Lane wells, which provides additional explanation for the artesian conditions at the Farmers Lane wells.[29]

1.4.4.1.4 Groundwater Storage

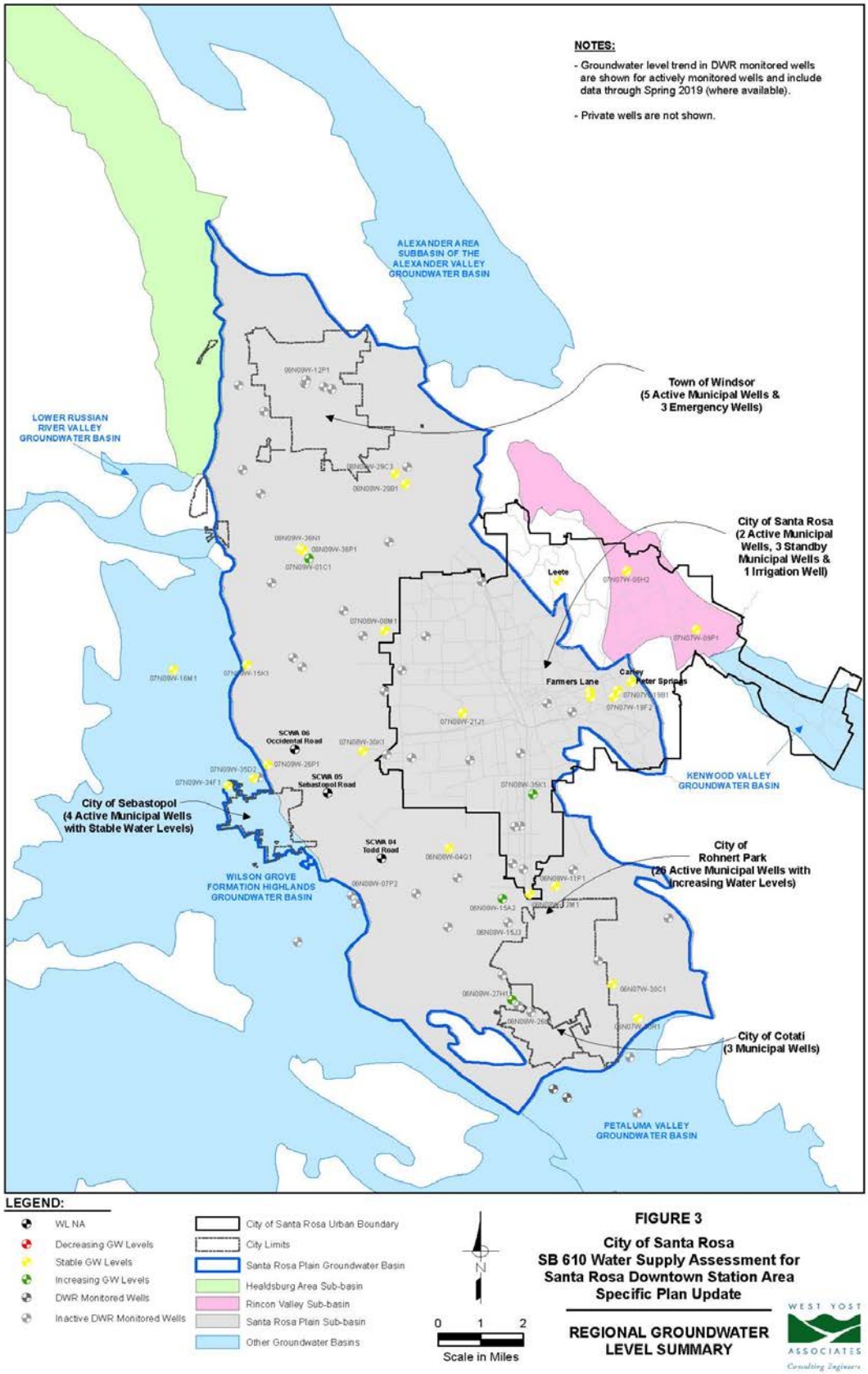
Over the years, several estimates have been made of the groundwater storage capacity of the Santa Rosa Plain Sub-basin. These estimates of storage capacity range from 948,000 AF to 4,313,000 AF. Using the water level information for the spring of 1980 and the product of the TRANSCAP computer program, the volume of groundwater actually in storage was estimated to be 3,910,000 AF. [30]

Based on work by DWR, a brief description of each storage capacity estimate follows:[31]

- USGS estimated the gross groundwater storage capacity for this basin to be about 948,000 AF based on the average specific yield of 7.8 percent for aquifer materials at depths of 10 to 200 feet.

[28] City of Santa Rosa, 2035: General Plan Water Supply Assessment, Section 2.4.4.1.3.
[29] West Yost and Associates, Technical Memorandum, Evaluation of Potential Impacts Associated with Increased Groundwater Production from Farmers Lane Wells W4-1 and W4-2, July 22, 2004.
[30] California Department of Water Resources, February 27, 2004.
[31] Ibid.

Figure 3: Regional Groundwater Level Summary



- DWR performed a study of the area in 1982 and calculated the groundwater storage capacity for this basin to be 4,313,000 AF. This calculation was made using the TRANSCAP computer program, assuming aquifer thicknesses ranged from 50 to over 1,000 feet with an average thickness of approximately 400 feet.

1.4.4.1.5 Groundwater Budget

According to the DWR Bulletin 118, a groundwater model for the Santa Rosa Plain Sub-basin was prepared by the DWR in 1982.[32] The 15-year period from 1960-61 through 1974-75 was selected as the study period for the Santa Rosa Plain Sub-basin because it contained a mixture of wet and dry years approximating long-term climatic conditions. Average annual natural recharge for the period 1960 to 1975 was estimated to be about 29,300 AF. Average annual pumping during the same time period was estimated to be approximately 29,700 AF, indicating that the annual natural recharge and the annual pumping within the sub-basin were essentially in balance.

More recently the USGS estimated changes in groundwater storage for the Santa Rosa Plain Watershed, which includes the Santa Rosa Plain Sub-basin, using the GSFLOW model. USGS evaluated long-term changes in storage for the period 1976 through 2010 as decreasing by 3,300 AFY. This change in storage is very small in comparison to the overall groundwater storage in the Santa Rosa Plain Watershed. The very small change in storage is consistent with generally stable groundwater levels in the sub-basin, which indicate that groundwater storage in the sub-basin is in balance.

With respect to the area in the vicinity of the City's Farmers Lane wells, it has been estimated that the annual groundwater recharge to the area from which the Farmers Lane wells extract groundwater is on the order of 2,500 AFY, using historical rainfall data and an estimate of the potential recharge area. This quantity of recharge is larger than the maximum quantity of groundwater the City plans to pump from the Farmers Lane wells (2,300 AFY).

1.4.4.1.6 Groundwater Management

Several municipal water purveyors, including the City and private parties, use groundwater within the Santa Rosa Plain sub-basin. These municipal water purveyors and the County are working collectively to better understand and manage the regional groundwater resources.

In 2009, the California legislature passed Senate Bill x7-6, requiring groundwater level monitoring for every groundwater basin and sub-basin listed in DWR Bulletin 118. In response to the legislation, the California Statewide Groundwater Elevation Monitoring (CASGEM) Program was established. In December 2010, Sonoma Water and Sonoma County Permit and Resources Management District (PRMD) notified the Department of Water Resources that they would be the Monitoring Entities for 13 of the 14 groundwater basins and sub-basins located in Sonoma County. The City is working collaboratively with Sonoma Water and PRMD to provide groundwater level data as required by CASGEM for monitoring wells within Santa Rosa's service area.

As part of a joint effort, the USGS partnered with Sonoma Water, the cities of Santa Rosa, Rohnert Park, Cotati, and Sebastopol, the Town of Windsor, California American Water, and others, to undertake a cooperative study. The objectives of this study were to: 1) Develop an updated assessment of the geohydrology, geochemistry and geology of the Santa Rosa Plain Sub-basin; 2) Develop a groundwater

[32] California Department of Water Resources, February 27, 2004.

flow model of the Santa Rosa Plain Sub-basin; and 3) Evaluate the hydrogeologic impacts of alternative groundwater strategies for the Santa Rosa Plain Sub-basin. Final results of the study were released in 2013, followed by the release of the surface water/groundwater model report in 2014. A detailed summary of the USGS report is included in the Sonoma Water 2015 UWMP.

The USGS study identified the following key findings from the study area:[33]

- Groundwater Quality – Many wells in the Santa Rosa Plain Sub-basin produce high quality water, but naturally occurring elements such as iron, manganese, boron, and arsenic are widely variable in groundwater and can pose problems in some areas. Areas in the southern Santa Rosa Plain Sub-basin also exhibit increasing chloride concentrations. Groundwater underlying the City's service area generally meets primary and secondary drinking water standards for municipal use.
- Groundwater Level Trends – Groundwater trend data from the existing monitoring wells located throughout the Sub-basin indicate that water levels within the main portion of the Sub-basin have generally remained constant or have slightly increased over time, indicating that the Sub-basin is in balance and is not suffering from overdraft.
- Groundwater Storage and Budget – The gross groundwater storage capacity for the basin is estimated to be about 948,000 AF. The water budget for the Santa Rosa Plain Sub-basin (amount and sources of water entering versus the amounts and sources of water exiting the sub-basin) has been estimated using a computer model of groundwater flow. The results indicate that over the 35-year period simulated by the model (1975 through 2010), more water exited the basin through a combination of groundwater pumping and natural outflows than entered the basin, resulting in an average annual loss of groundwater storage of approximately 3,300 AFY. The estimated storage loss is a relatively small percentage of the total inflows estimated for the basin.

In September 2013, prior to the release of the final USGS study, the City adopted a Groundwater Master Plan (GMP). The overall objective of the City's GMP is to "provide a strategic road map for the City's Water staff, Board of Public Utilities (BPU), and City Council of how available groundwater resources could be most effectively used, in a sustainable manner, to meet the needs of the City's existing and future customers." [34]

The GMP provides background information on the City's historical use of groundwater, descriptions of ongoing studies, recommendations for an emergency groundwater supply plan, development of a key well monitoring network, and a conceptual evaluation of the potential use of aquifer storage and recovery wells. Included in the preparation of the GMP is the development of recommended groundwater policies designed to guide the future role of groundwater and promote balanced use and sustainability for the groundwater resource available to the City. Based on these recommended policies, specific groundwater projects and programs have been identified and prioritized to implement the direction of the BPU.

Additionally, the Santa Rosa Plain Watershed Groundwater Management Plan (SRPWGMP) was completed in 2014. The overall goal of the plan is to "locally manage and protect groundwater resources by a balanced group of stakeholders through non-regulatory measures to support all beneficial uses,

[33] U.S. Geological Survey, Nishikawa, Tracy, ed., 2013.
[34] West Yost Associates, City of Santa Rosa Groundwater Management Plan, Final Report, September 2013.

including human, agriculture, and ecosystems, in an environmentally sound, economical, and equitable manner for present and future generations." The SRPWGMP laid out eighteen basin objectives that were grouped into the following six general focus areas: [35]

- Stakeholder Involvement and Public Awareness
- Monitoring and Modeling
- Groundwater Protection
- Increase Water Conservation
- Increase Water Reuse
- Integrated Groundwater Management

The Santa Rosa City Council recommended that Sonoma Water's Board of Director's adopt the SRPWGMP, which it did in fall 2014. The City served on the SRPWGMP Basin Advisory Panel and participated in the 2014 Cooperative Agreement for Implementation of Santa Rosa Plain Groundwater Management Program and provided funding for the first two years of implementation of the SRPWGMP.

Also, in 2014, the State Legislature passed the Sustainable Groundwater Management Act (SGMA), requiring the formation of a Groundwater Sustainability Agency (GSA) and preparation of a Groundwater Sustainability Plan (GSP) to sustainably manage groundwater supplies. DWR has identified the Santa Rosa Plain Sub-basin as a medium-priority groundwater basin that is not critically overdrafted.

In response to SGMA, local agencies worked together to form the Santa Rosa Plain GSA as a public agency in June 2017. The Santa Rosa Plain GSA has a Board of Directors, an administrator, and an advisory committee. The appointed Board of Directors includes City and Town Council members from municipalities in the sub-basin (Santa Rosa, Cotati, Windsor, Rohnert Park, and Sebastopol), Board members of other eligible agencies (County of Sonoma, Sonoma Water, Goldridge Resource Conservation District, and Sonoma Resource Conservation District) and a representative of independent water systems serving customers within the basin. The Advisory Committee to the Santa Rosa Plain GSA is comprised of community members with diverse perspectives on beneficial groundwater use, including representatives from agriculture, the environmental community, the business community, rural residential well users and public water districts. The Advisory Committee's purpose is to provide input and recommendations to the Santa Rosa Plain GSA Board of Directors on groundwater sustainability plan development, implementation and policies.

Each GSA must submit a GSP by January 31, 2022. The GSP will define sustainable management criteria thresholds and measurable objectives and provide an implementation plan to evaluate, monitor, and manage the Santa Rosa Plain Sub-basin sustainably so as to avoid undesirable results listed in SGMA: lowering of groundwater levels, depletion of groundwater storage, surface water depletion, water quality degradation, land subsidence, and seawater intrusion.

The City is a member of the Santa Rosa Plain GSA and will continue to participate as a member of the GSA during the preparation and implementation of the GSP. While the groundwater management measures have not been finalized by the GSA at this time, it is expected that the GSP will include measures to manage groundwater that may include but not be limited to: [36]

[35] Santa Rosa Plain Basin Advisory Panel, Santa Rosa Plain Watershed Groundwater Management Plan, (October 2014).
[36] Distilled from information available on the Santa Rosa Plain GSA website's Groundwater Sustainability Plan webpage https://santarosaplaingroundwater.org/gsp/ (accessed on various dates in December 2019 and January 2020).

- Increased conservation and efficiency
- Increased groundwater recharge
- Increased water recycling and reuse
- Integrated groundwater management with other water resources (such as stormwater)

1.4.4.2 Existing Groundwater Supply

The City has a total of six municipal groundwater wells within the Santa Rosa Plain Sub-basin. These six wells are listed along with their current status in **Table 6**. Two of the City's municipal wells (Carley and Peter Springs Wells) are currently operated primarily to provide some landscape irrigation to an adjacent park and school landscaping. These wells are also available and approved by DDW for emergency potable use, on a standby status. Two of the wells (Farmers Lane Wells Nos. W4-1 and W4-2) are on active status. One well (Farmers Lane Well No. 3) is operated to provide minor amounts of landscape irrigation water supply only. One well (Leete Well) is used for emergency potable purposes only.

Table 6 – City of Santa Rosa Municipal Groundwater Wells [a]

Well Name/Number	Well Status
Leete (W1)	Standby; used for emergency potable purposes only
Carley (W2-1)	Standby; used for emergency potable purposes and some landscape irrigation
Peters Spring (W2-2)	Standby; used for emergency potable purposes and some landscape irrigation
Farmers Lane (W4-1)	Active status [b]
Farmers Lane (W4-2)	Active status [b]
Farmers Lane (W4-3)	Not connected to City's potable water distribution system; used strictly for minor landscape irrigation purposes

[a] The City has two other municipal wells that are either out of service or inactive: Freeway Well (W3) is out of service due to groundwater contamination caused by others; Sharon Park Well (W6) is inactive due to severe sanding.
[b] Change in status approved by DPH (now DDW) on July 20, 2005.

The City's Farmers Lane Wells Nos. W4-1 and W4-2 started providing supply to the City's potable water system in 2007 to supplement supplies obtained from Sonoma Water and to provide supply during high demand periods. Before the City obtained surface water supplies from Sonoma Water, the Farmers Lane wells contributed a significant portion of the groundwater supplies required to meet the City's demands. Of the City's roughly 2,870 AFY of historical groundwater demand, it is estimated that the Farmers Lane Wells supplied about 1,720 AFY.[37]

1.4.4.2.1 Existing City Municipal Groundwater Pumpage

The City has a total of six municipal groundwater wells within the Santa Rosa Plain Sub-basin. The approximate locations of these wells are shown on **Figure 3**. These six wells are listed in **Table 6** in **Section 1.4.4.2**, along with their current status.

The Farmers Lane wells are located near the mouth of Bennett Valley on the east side of the Santa Rosa Plain Sub-basin. The major geologic formations underlying the vicinity of the Farmers Lane wells include the Younger Alluvium, the Older Alluvium, the Glen Ellen and Huichica Formations, the Sonoma Volcanics, the Wilson Grove Formation and the Petaluma Formation. The wells are located within a major regional fault zone comprised of the Rodgers Creek and Healdsburg fault zones. The wells are 800

[37] West Yost Associates, July 22, 2004.

and 1,000 feet deep and draw water from the deep aquifer which is predominantly Sonoma Volcanics. Water levels observed in the Farmers Lane wells have been in an artesian condition for several years. A groundwater treatment system has been constructed at the site of the Farmers Lane wells for iron and manganese removal and disinfection.

Table 7 summarizes the City's municipal groundwater pumpage in the last five years.

Table 7 – City of Santa Rosa Municipal Groundwater Pumpage Over Past Five Years

Basin/Sub-basin Name	Historical Municipal Groundwater Pumpage (AFY)				
	2015	2016	2017	2018	2019
Santa Rosa Valley Groundwater Basin: Santa Rosa Plain Sub-basin	1,198	1,227	1,309	0 [a]	666
Santa Rosa Valley Groundwater Basin: Rincon Valley Sub-basin	The City does not have any wells or pump any groundwater from this sub-basin				
Kenwood Valley Groundwater Basin	The City does not have any wells or pump any groundwater from this groundwater basin				

[a] In 2018 the City's two groundwater production wells were offline for pump replacement.

1.4.4.2.2 Projected City Municipal Groundwater Pumpage

In the future, it is anticipated that the Farmers Lane wells may be operated as much as 40 to 60 percent of the time at a pumping rate of about 2,400 gallons per minute (gpm), which would equate to an annual pumpage quantity of approximately 1,550 to 2,300 AFY. This projected pumpage quantity is less than the City's maximum historical groundwater pumpage of 2,870 AFY. There are currently no plans for additional active City production wells within the Santa Rosa Plain Sub-basin or any new City production wells within the Rincon Valley Sub-basin or Kenwood Valley Groundwater Basin. The City constructed a series of test borings to gain a better understanding of the Santa Rosa Plain Sub-basin and adopted its Groundwater Master Plan in 2013 to help shape the City's future groundwater development. [38]

Table 8 presents the current amount of groundwater projected to be pumped by the City.

Table 8 – Projected City of Santa Rosa Groundwater Pumpage Through 2040 [a]

Basin/Sub-basin Name	Projected Future Municipal Groundwater Pumpage (AFY)				
	2015	2020	2025	2030	2035
Santa Rosa Valley Groundwater Basin: Santa Rosa Plain Sub-basin	2,300	2,300	2,300	2,300	2,300
Santa Rosa Valley Groundwater Basin: Rincon Valley Sub-basin	The City does not plan to pump groundwater from this sub-basin in the future.				
Kenwood Valley Groundwater Basin	The City does not plan to pump groundwater from this basin in the future.				

[a] Source: Table 6-13, City 2015 UWMP

It should be noted that the City has a Mitigation and Monitoring Program in place for the Farmers Lane wells that includes monitoring of groundwater levels in the vicinity of the Farmers Lane wells and modified pumping rates if an adverse decline in groundwater levels and/or other adverse effects are detected.

[38] West Yost Associates, September 2013.

The groundwater basin does not appear to have physical constraints for pumping if used as planned to provide supplemental and peaking capacity to the primary supply source provided by Sonoma Water, in addition to utilizing the groundwater basin as an emergency supply source. The long-term sustainable yield of the groundwater basin will be refined as the Santa Rosa Plain GSA develops a better understanding of the basin's sustainable yield with the completion of its GSP by 2022.

1.4.4.3 Analysis of Sufficiency of Groundwater to meet Project Water Demands

Based on available information, this WSA finds that the groundwater supplies in the Santa Rosa Plain Sub-basin are sufficient to meet the City's existing groundwater supply of 2,300 AFY. This finding is based on the following facts regarding the overall Santa Rosa Plain Sub-basin and the area of the sub-basin underlying the City:

- As stated in the DWR Bulletin 118 groundwater basin description of the Santa Rosa Plain Sub-basin, last updated in February 2004, and as indicated in the 2014 USGS report on the Santa Rosa Plain Watershed, the Santa Rosa Plain Sub-basin as a whole is generally in balance.
- Review of groundwater levels in DWR monitored wells located throughout the Santa Rosa Plain Sub-basin and in the City of Santa Rosa wells indicates that most wells have had either increasing or stable groundwater levels for the last 17 to 29 years. These increasing or stable groundwater levels are a key indication that the Santa Rosa Plain Sub-basin is in a state of equilibrium (balanced condition), and that it is not in an overdraft condition.
- DWR monitored wells with historically decreasing groundwater levels, including two actively monitored wells and five historically monitored wells, primarily located southwest of the City near the western fringe of the Santa Rosa Plain Sub-basin, are likely indicative of localized groundwater pumping conditions and are not indicative of overall sub-basin conditions.
- Groundwater levels in DWR actively monitored wells in and adjacent to the City have been either increasing or stable for the last 17 to 29 years indicating that the portion of the Santa Rosa Plain Sub-basin underlying the City is in balance.
- Narrowing focus to the City's production wells, these wells are situated in Rodgers Creek-Healdsburg Fault Zone. Deep fracturing in the fault zone has increased permeability in the vicinity of the Farmers Lane wells, thereby contributing to their relatively high yield and the rapid recovery of groundwater levels after pumping (see hydrograph Appendix B). Additionally, the fault (and likely its branches) create a barrier to lateral groundwater flow, isolating the effect of pumping in the Farmers Lane wells to the area around the wells, effectively limiting impacts to other wells and areas of the Sub-basin.
- In the years before the City began receiving surface water from Sonoma Water, the City relied exclusively on groundwater to meet its water demands and historical municipal groundwater pumpage was estimated to be up to about 2,870 AFY. In 2007, the City began pumping the Farmers Lane wells to supplement supplies from Sonoma Water, and to assist in meeting high demand periods. In the future, it is anticipated that the City's Farmers Lane wells may be operated as much as 40 to 60 percent of the time at a pumping rate of about 2,400 gpm, which would equate to an annual pumpage quantity of approximately 1,550 to 2,300 AFY. This projected municipal pumpage will be less than the City's maximum historical groundwater pumpage (2,870 AFY) and less than the estimated annual groundwater recharge in the area from which the Farmers Lane wells extract groundwater (2,500 AFY).

Based on these facts, the groundwater supplies in the Santa Rosa Plain Sub-basin are sufficient to meet the City's existing groundwater supply of 2,300 AFY.

1.4.5 Recycled Water

The City is the owner and operator of the Laguna Treatment Plant Regional System (Regional System, formerly known as the Subregional System), which includes the Laguna Wastewater Treatment Facility, a tertiary-level treatment facility that has an average daily dry weather flow of 16.5 mgd and is permitted for 21.34 mgd. The recycled water that leaves the treatment plant is high-quality, tertiary treated water that is approved for many reuse purposes, including irrigation of urban landscapes, playgrounds, golf courses, public parks, agricultural crops, and vineyards.

Depending upon the amount of rainfall in any given year, between 90 and 100 percent of the Regional System's wastewater is recycled for urban and agricultural irrigation and for the Geysers Recharge Project. The Regional System's existing urban reuse program irrigates many schools, parks and businesses in Rohnert Park, including Sonoma State University. In the City, recycled water is used for landscape irrigation of businesses and parks, including Finley Park and A Place to Play sports complex. In 2018, approximately 6,000 acres of farmlands and vineyards were irrigated with recycled water for agricultural purposes. The irrigation system is supported by storage reservoirs that can hold over 1.7 billion gallons of water, which allows the system to meet peak, hot summer day irrigation requirements.

The Regional System also supplies recycled water to the Geysers Recharge Project. The Geysers Recharge Project came into operation in 2003 and pumps, on average, 13 mgd of recycled water to the Geysers steamfields in the Mayacamas Mountains. This geothermal operation injects the water through wells into the underground steamfield at depths of 4,000 to 11,000 feet, where it is heated to produce a clean, "dry" steam that is used to produce clean electricity for up to 100,000 households in the North Bay Area.

1.4.5.1 Historical and Existing Urban Recycled Water Use

The City's current and historical use of recycled water has been limited to areas within close proximity to the Regional System's distribution network. In recent years, the City has used approximately 140 AFY of recycled water for urban landscape irrigation within its service area.

In 2001, the City undertook the Incremental Recycled Water Program (IRWP), which included plans for recycled water urban reuse efforts. The IRWP outlined a water recycling alternative that could replace the City's potable water sources (not including private groundwater supply sources) up to a maximum of 2,200 AFY upon implementation and 4,400 AFY by 2020 depending on wastewater disposal capacity need.

In April 2005, the City began work on the City's Urban Reuse Project expansion conceptual plan, which analyzed several alternatives for expanded urban reuse within the City service area. In September 2006, the BPU approved contracts for pre-design of a phased urban reuse project with ultimate service to the majority of the south and west portions of the City, and a total delivery of 3,000 AFY to sites which would otherwise be served by potable water.

In December 2007, the City approved the Santa Rosa Urban Reuse Project which could serve up to 3,000 AFY of recycled water to current and future approved water uses, primarily landscape irrigation. The cost of implementing the 3,000 AFY Santa Rosa Urban Reuse Project is estimated to be a total of $119

million, in 2006 dollars. This project would be implemented in phases, as needed for water supply offset and wastewater disposal capacity. The phased nature of the urban reuse alternative allows City policy makers to develop this water supply source incrementally as more supply is needed, while continuing to evaluate other potentially more cost- effective water supply sources for future water supply needs.

The City selected Phase 1 West as the first phase of the Urban Reuse Project to be implemented. Phase 1 West is designed to provide up to 750 AFY of recycled water and the City initiated a small segment of this project in 2009. However, based on the City 2015 UWMP projected water supply and wastewater disposal capacity needs, it is anticipated that the City will not need to complete construction of Phase 1 West. Due in part to the City's success in reducing potable water demands and the projected continuation of water conservation practices, the City has determined that it is not cost effective to expand the recycled water distribution system through the UWMP planning period (2040).

As shown in **Table 9**, recycled water use is projected to be 140 AFY out to 2040.

Table 9 – Existing and Planned Recycled Water Use in the City of Santa Rosa (AFY) [a]

User type	2015	2020	2025	2030	2035	2040
Urban Landscape irrigation	140	140	140	140	140	140

[a] Source: Table 6-8, 2015 City UWMP

1.4.6 Stormwater Capture

The City of Santa Rosa and most development projects within the City must meet requirements to reduce stormwater pollution, protect water quality of local waterways, and promote groundwater recharge. The City's stormwater requirements prioritize the use of infiltration-based landscape features for stormwater treatment. Low Impact Development (LID) features utilize the natural cleaning properties of soil, plants, and microbial activity to breakdown pollutants and allow for stormwater to recharge groundwater aquifers and maintain stream flow. These LID features are required on developments that create 10,000 square feet or more of impervious surface. Any increase in runoff volume off of a developed site (for a storm up to 1 inch in a 24-hour period) must be infiltrated back into the soil or stored and reused on site. Additionally, runoff from all paved areas and rooftops must be filtered through these landscaped features to remove pollutants. These policies help to hydraulically mimic the undeveloped condition which provides aquifer recharge, preserves stream flow, cleans storm water, and reduces demand on potable water for irrigation. The City does not divert stormwater for water supply.

1.4.7 Water Conservation

The City has been and continues to be a leader in implementing innovative water conservation programs. Water conservation and demand management are an integral part of the City's water management strategy.

The City has been implementing water conservation programs since the 1976-1977 drought. In the early 1990s, the City further expanded the program with the creation and hiring of a full-time Water Conservation Coordinator. In 1998 the City became a signatory to the California Urban Water Conservation Council (now the California Water Efficiency Partnership) Memorandum of Understanding (1998 MOU) Regarding Urban Water Conservation dated September 1997. The City was recognized by the Public Officials for Water and Environmental Reform 2007 Water Conservation Scorecard as one of

only two water retailers in the State of California to successfully complete all 14 best management practices as outlined in the 1998 MOU, without an exemption.

The City has spent over $25 million (Water Department and grant funding) on its water conservation programs, including replacement of approximately 56,000 toilets with ultra-low-flow and high-efficiency toilets and the replacement of over 3.5 million square feet of high-water use landscapes with low water use landscapes. Additionally, the City implements innovative programs such as its rainwater harvesting rebate program, graywater reuse ("laundry-to-landscape") rebate program, hot water recirculation plump incentive, and sustained reduction rebate program. The City's cumulative water conservation implementation since 1998 has resulted in sustained water use savings of approximately 4,750 AFY, reducing the City's total water demand by 20 percent compared to the City's highest demand water year (2004).

Santa Rosa is committed to integrating water conservation into current and future supply and demand solutions for both the water system and the recycled water system. Currently, the City implements the following demand management measures and best management practices:

- Full time water conservation program coordination and staffing;
- Distribution system water loss auditing and water loss controls;
- Enforcement of its Water Waste Prevention ordinance;
- Metering and monthly billing of all water customers;
- Conservation pricing and rate structure;
- Public education and outreach; and
- Free services and financial incentives and rebates to help customers use water wisely in all sectors (residential, commercial, industrial, institutional, and large landscape irrigation).

Additional details regarding the City's conservation efforts can be found in the City's 2015 UWMP.

1.5 Demands

As discussed in **Section 1.3** of this WSA, the City 2015 UWMP demand projections and the Project demand projections are the bases for the demand assessment in this WSA. The City 2015 UWMP projected demand through 2040, including buildout of the City's current General Plan 2035. These projections were based on an analysis performed by Maddaus Water Management (Appendix E of the City 2015 UWMP). The Project net increase in demand (870 AFY) was developed as described in **Section 1.5** of this WSA. The phased development of the Project out to 2040 and the associated phased water demand projections are described below in **Section 1.5.1.4**.

1.5.1 Project Water Demand Projections

To calculate the net increase in projected water demand for the Project, the total projected water demand for the 2007 DSASP (which amended the General Plan 2035) was compared to the total projected water demand for the Project.

1.5.1.1 2007 DSASP Water Demand Projections

The WSA for the 2007 DSASP projected water demand by converting the net change in land use compared to existing (2005) into Residential Equivalency Factors (REFs) consistent with the land use classifications and zoning code, and with those set forth in Water Code Section 10912 (a).

Table 10 compares the proposed land use development of the 2007 DSASP to existing (2005) land use and shows the increase/decrease by land use category, as shown in the WSA for the 2007 DSASP.

Table 10 – 2007 DSASP Land Use Development Versus Existing (2005) Land Use [a]

	Existing (2005)		2007 DSASP Buildout		Net Change	
Land Use Category	Square Feet	Units	Square Feet	Units	Square Feet	Units
Residential Detached	-	739	-	775	-	36
Residential Attached	-	1,230	-	4,444	-	3,214
Senior Housing	-	76	-	76	-	0
Commercial/Retail	2,133,737	-	2,430,000	-	296,263	-
Office	1,293,586	-	1,350,000	-	56,414	-
Public/Institutional (Service)	498,880	-	640,000	-	141,120	-
Heavy Industrial	8,600	-	0	-	-8,600	-
Light Industrial	711,303	-	20,000	-	-691,303	-
Total	4,646,106	2,045	4,440,000	5,295	-206,106	3,250

[a] Source: City of Santa Rosa, SB 610 Water Supply Assessment for Downtown Station Area Specific Plan (December 2006).

Table 11 converts the net change in land use for the 2007 DSASP into REFs consistent with the land use classifications and zoning code, and with those set forth in Water Code Section 10912 (a) and then determines the projected water demand using REFs, using the same approach implemented in the WSA for the 2007 DSASP.

One REF is equivalent to the average water use of one detached residential unit per year. The City's average detached residential unit water use in the WSA for the 2007 DSASP was 110,000 gallons per year, based on the ten-year average of annual single-family residential water use at that time (1996-2005). Attached residential water use includes minimal landscape irrigation and averaged 67 percent of the detached residential water use. Non-residential use categories were converted into REFs based on land use categories and equivalent water use per Water Code Section 10912(a).

The annual water demand at buildout for the 2007 DSASP was calculated to be 110,000 gallons per REF multiplied by 2,700 REFs, or a total of 297 million gallons per year (2,700 X 110,000 gallons), or approximately 911 AFY (297,000,000 gallons ÷ 325,851 gallons per acre foot). The total demand for the 2007 DSASP also included the system standard for nonrevenue water. Nonrevenue water is the difference between water produced and water sold. Nonrevenue water includes metered and unmetered water use, such as water used for fire protection and training, water system flushing, sewer cleaning, construction, system leaks, as well as water used by unauthorized connections. Nonrevenue water use can also result from meter inaccuracies. Based on the WSA completed for the 2007 DSASP, the nonrevenue factor used for the Santa Rosa system at that time was 7 percent. The addition of nonrevenue water brings the total 2007 DSASP water demand to 975 AFY (911 AFY x 1.07).

Table 11 – 2007 DSASP Residential Equivalency Factors and Total Water Demand [a]

Land Use Category	Net Project Area (square feet)	Net Residential Units	REF Conversion Factor	Residential Equivalency Factors (REFs)
Residential Detached	N/A	36	1 REF/unit	36
Residential Attached	N/A	3,214	2/3 REF/unit	2,153
Commercial/Retail	352,677	N/A	1 REF/500 SF	705
Public/Institutional (Service)	141,120	N/A	1 REF/500 SF	282

General Industrial	-699,903	N/A	1 REF/1,300 SF	-538
Park Landscape	174,240	N/A	1 REF/2,819 SF	62
Total	-31,866	3,250		2,700
Projected Water Demand			975 AFY [b]	

[a] Source: Table 3, Woodard & Curran, January 22, 2020.
[b] 2,700 REFs x 110,000 gal/REF x 1.07 [nonrevenue water factor, 2010 UWMP] ÷ 325,851 gallons per acre foot

1.5.1.2 Project Water Demand Projections

Table 12 compares the proposed land use development of the Project to existing (2005) land use and shows the increase/decrease by land use category.[39]

Table 12 – Proposed Land Use Development for the Project Versus Existing (2005) Land Use [a]

	Existing (2005)		2019 DSASP Buildout		Difference	
Land Use Category [b]	Square Feet	Units	Square Feet	Units	Square Feet	Units
Residential Detached	-	739	-	817	-	78
Residential Attached	-	1,230	-	8,551	-	7,321
Senior Housing	-	76		76		0
Office	2,133,737	-	1,919,341	-	-214,396	-
Retail	1,293,586	-	2,553,067	-	1,259,481	-
Public/Institutional (Service)	498,880	-	1,054,549	-	555,669	-
Industrial	719,903	-	542,257	-	-169,046	-
Total	4,637,506	2,045	6,069,214	9,444	1,431,708	7,399

[a] Source: Table 4, Woodard & Curran, January 22, 2020.
[b] Senior housing is not included in this table as there is no change in the number of units compared to existing (2005).

Table 13 converts the Project net change in land use units into REFs and then projects total water demand for the Project. The projected water demand for the Project is calculated based on the same methodology used above for the 2007 DSASP, except the REF was reduced to 70,000 gallons per year, based on the most recent ten-year average of annual single-family residential water use (2009-2018).

The water demand for the Project is 70,000 gallons per REF multiplied by 8,026 REFs, or a total of 561.82 million gallons per year (8,026 REFs X 70,000 gallons/REF), or approximately 1,724 AFY (561,820,000 gallons ÷ 325,851 gallons per acre foot). The annual demand for the Project must also include the system standard for nonrevenue for water. Based on the City 2015 UWMP, the nonrevenue factor is 7 percent for the Santa Rosa system. The addition of nonrevenue water brings the total Project water demand to 1,845 AFY (1,724 AFY x 1.07).

Table 13 – Project Residential Equivalency Factors (REFs) and Total Water Demand [a]

Land Use Category	Net Project Area (square feet)	Net Residential Units	REF Conversion Factor	REFs
Residential Detached	N/A	78	1 REF/unit	78
Residential Attached	N/A	7,321	2/3 REF/unit	4,881
Office	-214,396	N/A	1 REF/500 SF	-430
Commercial/Retail	1,259,481	N/A	1 REF/500 SF	2518
Public/Institutional (Service)	555,669	N/A	1 REF/500 SF	1,110
General Industrial	-169,046	N/A	1 REF/1,300 SF	-131

[39] Woodard & Curran, January 22, 2020.

Total	1,431,708	7,399		8,026
Projected Demand (AFY)			1,845 [b]	

[a] Source: Table 5, Woodard & Curran, January 22, 2020.
[b] 8,026 REFs x 70,000 gal/REF x 1.07 [nonrevenue water factor, 2015 UWMP] ÷ 325,851 gallons per acre foot

1.5.1.3 Net Water Demand for the Project

The WSA developed for the 2007 DSASP amended the General Plan to include demand for the 2007 DSASP. Therefore, this WSA for the Project need only consider the net change in water demand as compared with the 2007 DSASP.

Table 14 compares the total projected water demand for the Project (1,845 AFY) to that of the 2007 DSASP (975 AFY) and shows the Project increases demand by 870 AFY (1,845 AFY – 975 AFY).

Table 14 – Net Change in Demand

	REFs	Water Demand (AFY)
Project	8,026	1,845 AFY [a]
2007 DSASP	2,700	975 AFY [b]
Net Increase	5,326	870 AFY

[a] 8,026 REFs x 70,000 gal (avg. 2009-2018)/REF x 1.07 [nonrevenue water factor, 2015 UWMP] ÷ 325,851 gallons/AF
[b] 2,700 REFs x 110,000 gal (avg. 1996-2005)/REF x 1.07 [nonrevenue water factor, 2010 UWMP] ÷ 325,851 gallons/AF

1.5.1.4 Project Development and Demand Phasing

This WSA assumes that the entire Project will be developed over the span of twenty years, with the majority of development occurring within the first ten years.[40]

Table 15 shows a breakdown of the anticipated phasing of development for the Project development, and **Table 16** shows the associated water demands for each phase.

Table 15 – Phased Development by Land Use Category for Project [a]

Land Use Categories	2020-2025	2025-2030	2030-2035	2035-2040	Total
Percent of Project to be Developed	25%	40%	20%	15%	100%
Residential					
Medium High Density	19 units	31 units	16 units	12 units	78 units
High Density	1,830 units	2,929 units	1,464 units	1,098 units	7,321 units
Non-Residential					
Office	-53,599 SF	-85,759 SF	-42,879 SF	-32,159 SF	-214,396 SF
Retail & Service	314,870 SF	503,793 SF	251,896 SF	188,922 SF	1,259,481 SF
Public/Institutional	138,917 SF	222,268 SF	111,134 SF	83,350 SF	555,669 SF
Industrial	-42,262 SF	-67,618 SF	-33,809 SF	-25,357 SF	-169,046 SF
Total	357,927 SF	572,683 SF	286,342 SF	214,756 SF	1,431,708 SF
	1,849 units	2,960 units	1,480 units	1,110 units	7,399 units

[a] Source: Table 6, Woodard & Curran, January 22, 2020.

[40] Woodard & Curran, January 22, 2020.

Table 16 – Phased Water Demand Projections for Project [a]

Water Demand by Phase	2020	2025	2030	2035	2040
Total Project Water Demand	0 AFY	461 AFY	1,199 AFY	1,568 AFY	1,845 AFY
Net Project Water Demand	0 AFY	217 AFY	565 AFY	739 AFY	870 AFY

[a] Source: Tables 7 and 9, Woodard & Curran, January 22, 2020.

1.5.2 Normal Year Water Demand Projections

Table 17 summarizes historic and planned future projected potable water demand for the current and planned future uses (City 2015 UWMP demand projections) and the projected incremental additional demand for the Project under normal year conditions in five year increments out to 2040.[41]

Table 17 – Normal Year Historical and Projected Water Demand, Normal Year (AFY)

Water Demand, Normal Year Conditions	2015 actual	2020	2025	2030	2035	2040
City 2015 UWMP demand projections [a]	16,679	24,289	25,730	26,946	28,243	28,280
Project net increase in demand	0	0	217	565	739	870
Total Water Demand	16,679	24,289	25,947	27,511	28,982	29,150

[a] Source: Table 4-5, City 2015 UWMP

1.6 Dry Year Analysis

When comparing water demand and water supplies to determine availability of a long-term reliable water supply for the proposed development, the assessment must consider available supply under normal, single-dry year, and multiple-dry water year conditions. The purpose is to evaluate whether there could be shortfalls in supply under various hydrologic conditions, and if so, to provide a basis for planning for those conditions.

Supplies for normal, single-dry, and multiple-dry year scenarios were fully analyzed in the City 2015 UWMP. **Table 18** lists the years on which the dry year scenarios were based.

Table 18 – Basis of Dry Year Analysis [a]

Water Year Type	Base Year(s)
Normal Water Year	1962
Single-Dry Water Year	1977
Multiple-Dry Water Years	1988–1991

[a] Source: Table 7-1, City 2015 UWMP

Table 19 shows the current and planned future single-dry year supply and demand projections and the Project demand to assess single-dry year supply versus total demand.

In the City 2015 UWMP single-dry year analysis, projected demand reflects implementation of the City's Water Shortage Contingency Plan to achieve demand reductions of up to 14 percent by 2040 to ensure demand does not exceed supply. In like manner, the Adjusted Total Demands in **Table 19** represent implementation of more stringent water conservation efforts to achieve up to 3.6 percent reductions in demand. If circumstances require that demand be reduced by 10 percent or more, the City would

[41] Planned/future uses include projects anticipated in the General Plan 2015, City 2015 UWMP, and the proposed Elnoka Continuing Care Retirement Community development project.

implement the appropriate stage of its Water Shortage Contingency Plan to ensure demand for the Project does not exceed supply.

Table 19 – Single-Dry Year Supply and Demand Analysis (AFY)

Water Use Category	2020	2025	2030	2035	2040
Supply [a]	24,289	22,948	23,644	24,408	24,282
Demand for single-dry year scenario					
City 2015 UWMP single-dry year projections [b]	24,289	22,948	23,644	24,408	24,282
Project Demand projections	0	217	565	739	870
Total Demand	24,289	23,165	24,209	25,147	25,152
Difference (Supply – Total Demand)	0	-217	-565	-739	-870
Difference as percent of supply	0.0%	-0.9%	-2.4%	-3.0%	-3.6%
Difference as percent of demand	0.0%	-0.9%	-2.3%	-2.9%	-3.5%
Adjusted Total Demand [c]	24,289	22,948	23,644	24,408	24,282
Difference (Supply – Adjusted Total Demand)	0	0	0	0	0

[a] Source: Table 7-3, City 2015 UWMP

[b] Source: Table 7-3, City 2015 UWMP. Note: Table 7-3 incorporates implementation of the City's Water Shortage Contingency Plan to achieve reductions of up to 14 percent by 2035 to ensure demand does not exceed supply.

[c] The Adjusted Total Demand reflects implementation of more stringent water conservation measures and/or the City's Water Shortage Contingency Plan to ensure demand does not exceed supply in single-dry year conditions.

Table 20 shows the current and planned future single-dry year supply and demand projections and the Project demand to assess multiple-dry year conditions for supply versus total demand. In the City 2015 UWMP multiple-dry year analysis, demand is assumed to be the same as demand in normal year conditions, and supply is shown as being reduced to exactly match demand (supply is not shown at normal year levels). Therefore, **Table 20** uses the same assumptions. As a result, the total projected demand with the Project appears to exceed supply by up to three percent, assuming the Project achieves buildout by 2040. The Adjusted Total Demand figures in **Table 20** reflect the understanding that, if a water shortfall occurs in a multiple-dry year, the City would implement more stringent water conservation efforts to achieve up to 3.1 percent reductions in demand. If circumstances require that demand be reduced by 10 percent or more, the City would implement the appropriate stage of its Water Shortage Contingency Plan to ensure water demand does not exceed supply.

Table 20 – Multiple-Dry Year Supply and Demand Analysis (AFY)

		2020	2025	2030	2035	2040
Multiple-dry year first year	Supply totals [a]	24,289	25,730	26,946	28,243	28,280
	2015 UWMP Demand totals [b]	24,289	25,730	26,946	28,243	28,280
	Project Demand	0	217	565	739	870
	Total Demand	24,289	25,947	27,511	28,982	29,150
	Difference	0	-217	-565	-739	-870
	Difference as % of Supply	0.0%	-0.8%	-2.1%	-2.6%	-3.1%
	Difference as % of Demand	0.0%	-0.8%	-2.1%	-2.5%	-3.0%
	Adjusted Total Demand [c]	24,289	25,730	26,946	28,243	28,280
	Adjusted Difference	0	0	0	0	0

Multiple-dry year second year	Supply totals [a]	24,289	25,730	26,946	28,243	28,280
	2015 UWMP Demand totals [b]	24,289	25,730	26,946	28,243	28,280
	Project Demand	0	217	565	739	870
	Total Demand	24,289	25,947	27,511	28,982	29,150
	Difference	0	-217	-565	-739	-870
	Difference as % of Supply	0.0%	-0.8%	-2.1%	-2.6%	-3.1%
	Difference as % of Demand	0.0%	-0.8%	-2.1%	-2.5%	-3.0%
	Adjusted Total Demand [c]	24,289	25,730	26,946	28,243	28,280
	Adjusted Difference	0	0	0	0	0
Multiple-dry year third year	Supply totals [a]	24,289	25,730	26,946	28,243	28,280
	2015 UWMP Demand totals [b]	24,289	25,730	26,946	28,243	28,280
	Project Demand	0	217	565	739	870
	Total Demand	24,289	25,947	27,511	28,982	29,150
	Difference	0	-217	-565	-739	-870
	Difference as % of Supply	0.0%	-0.8%	-2.1%	-2.6%	-3.1%
	Difference as % of Demand	0.0%	-0.8%	-2.1%	-2.5%	-3.0%
	Adjusted Total Demand [c]	24,289	25,730	26,946	28,243	28,280
	Adjusted Difference	0	0	0	0	0
Multiple-dry year fourth year	Supply totals [a]	24,289	25,730	26,946	28,243	28,280
	2015 UWMP Demand totals [b]	24,289	25,730	26,946	28,243	28,280
	Project Demand	0	217	565	739	870
	Total Demand	24,289	25,947	27,511	28,982	29,150
	Difference	0	-217	-565	-739	-870
	Difference as % of Supply	0.0%	-0.8%	-2.1%	-2.6%	-3.1%
	Difference as % of Demand	0.0%	-0.8%	-2.1%	-2.5%	-3.0%
	Adjusted Total Demand [b]	24,289	25,730	26,946	28,243	28,280
	Adjusted Difference	0	0	0	0	0

[a] Source: Table 7-4, City 2015 UWMP. Note: Table 7-4 projects multiple-dry year supply will match (but not exceed) demands equal to normal year levels.

[b] Source: Table 7-4, City 2015 UWMP. Note: Table 7-4 assumes normal year demand levels in a multiple-dry year scenario.

[c] The Adjusted Total Demand reflects implementation of more stringent water conservation efforts and/or the City's Water Shortage Contingency Plan to ensure demand does not exceed supply in multiple-dry year conditions.

The City has experienced a number of droughts over the years, but it has not experienced a drought-based reduction in water supply or deliveries from Sonoma Water since 1976-77. To be conservative during dry conditions at various times, the City has adopted voluntary demand reduction Resolutions, and the community has quickly responded each time by reducing water use.

During the drought of 1988-1991, the City adopted a voluntary water reduction Resolution, and the community reduced water use accordingly. In 2001, the City adopted a voluntary demand reduction Resolution due to transmission system construction delays that impaired Sonoma Water's ability to meet peak summer demands, and the community reduced water use in response. During the 2007-2009 drought, Sonoma Water initially requested a regionwide voluntary reduction of 15 percent. In response, the City asked customers to voluntarily reduce their water use, and the City increased its water conservation efforts (e.g., implemented a water waste patrol, provided "water on request" cards to restaurants and "towel and linen" cards to hotels and motels, and provided all single-family residential customers and dedicated irrigation customers a "water wise" kit). As a result, water demand in Santa Rosa decreased by 15 percent. In 2009, Sonoma Water asked for additional reductions, and the City adopted Stage 1 - Voluntary of its Water Shortage Contingency Plan and provided additional information

to customers on ways to reduce their water use. As a result, customer water demands decreased by 25 percent communitywide.

During the recent historic drought (2014-2016), the City did not experience a water supply shortage. However, the City implemented Stage 2 of its Water Shortage Contingency Plan in response to the State's mandate. To achieve the State's requirement that the City reduce demand by 16 percent (despite adequate local supplies), the City launched an extensive public outreach campaign to promote participation in its robust water efficiency programs and also temporarily doubled the rebate dollar amount for landscape turf removal while in Stage 2 of the shortage declaration. These efforts helped the City's water customers reduce demand by more than 25 percent. The City also obtained a grant to fund a direct install program to upgrade over 6,000 residential toilets at no cost to customers (grant funded), which contributed to long term water savings as well.

If a water shortage triggers the City's Water Shortage Contingency Plan in the future, the City will implement demand management measures to ensure demand does not exceed supply. Measures may include restrictions and prohibitions on end users, increased marketing and outreach to customers, water waste prevention and enforcement, rate structure changes, and aggressive promotion of existing and temporary water conservation programs, incentives, and enhancements to help customers conserve water.

1.7 Sufficiency Determination

1.7.1 Supply and Demand Comparison

Table 21 compares normal year supply with projected water demands for current and planned future uses and the Project. Based on this comparison, at no time during the twenty-year assessment period of this WSA is a shortage in supply anticipated during non-drought conditions.

Table 21 – Normal Year Supply Versus Demand Comparison (AFY)

Water Use Category	2020	2025	2030	2035	2040
Supply [a]	31,540	31,540	31,540	31,540	31,540
City 2015 UWMP demand projections [a]	24,289	25,730	26,946	28,243	28,280
Project demand projections	0	217	565	739	870
Total Demand	24,289	25,947	27,511	28,982	29,150
Difference (Supply – Total Demand)	7,251	5,593	4.029	2,558	2,390
Sufficient Supply?	Yes	Yes	Yes	Yes	Yes

[a] Source: Table 7-2, City 2015 UWMP

Table 22 compares supply in a single-dry year with projected water demands for current and planned future uses and the Project. Based on the analysis in **Section 1.6**, supply is sufficient to meet demand under single-dry year conditions.

As described in the Sonoma Water 2015 UWMP, Sonoma Water's model projects a shortfall in supply during a single-dry year. Sonoma Water's single-dry year reduction is estimated to be about 19 percent of normal demand by 2035.[42] Because the City also has groundwater and recycled water in its portfolio,

[42] Sonoma County Water Agency, 2015 UWMP.

the resulting reduction would be up to 14 percent of the City's total supply. With the addition of the Project demand projections, the projected shortfall could be approximately 3.6 percent higher as shown in **Table 19** above, assuming the Project achieves buildout by 2040. **Table 22** below reflects the fact that, if a shortfall occurs during a single-dry year, the City would enact more stringent water conservation efforts to achieve up to 3.6 percent reductions in demand. If circumstances require that demand be reduced by 10 percent or more, the City would implement the appropriate stage of the City's Water Shortage Contingency Plan to ensure demand does not exceed supply.

However, a shortfall is not anticipated in a single-dry year. As described in **Section 1.4.2**, allocation among Sonoma Water's Water Contractors, including the City, during dry year conditions is governed by the Allocation Methodology of Section 3.5 of the Restructured Agreement. Due to the City's extensive water conservation, which is recognized by the Allocation Methodology, it is not likely that single-dry year conditions would reduce the volume of surface water available to the City. In addition, due to the short duration of a single-dry year and the artesian conditions of the City's Farmers Lane wells, it is not anticipated that groundwater supply would be impacted during a single-dry year.

Table 22 – Single-Dry Year Supply Versus Demand Comparison (AFY)

Water Use Category	2020	2025	2030	2035	2040
Supply	24,289	22,948	23,644	24,408	24,282
Total Demand	24,289	22,948	23,644	24,408	24,282
Difference	0	0	0	0	0
Sufficient Supply?	Yes	Yes	Yes	Yes	Yes

Table 23 compares supply in a multiple-dry year with projected water demands for current and planned future uses and the Project. Based on the analysis in **Section 1.6**, supply is sufficient to meet demand under multiple-dry year conditions.

With the addition of the Project demand projections, the projected shortfall could be approximately three percent higher as shown in **Table 20** above, assuming the Project achieves buildout by 2040. **Table 23** below reflects the fact that, if a shortfall occurs under multiple-dry year conditions, the City would enact more stringent water conservation measures to achieve up to 3.1 percent reductions in demand. If circumstances require that demand be reduced by 10 percent or more, the City would implement the appropriate stage of the City's Water Shortage Contingency Plan to ensure demand does not exceed supply. Therefore, supply is sufficient to meet demand.

Table 23 – Multiple-Dry Year Supply Versus Demand Comparison (AFY)

Water Use Category	2020	2025	2030	2035	2040
Supply each year, Years 1-4	24,289	25,730	26,946	28,243	28,280
Total Demand each year, Years 1-4	24,289	25,730	26,946	28,243	28,280
Difference	0	0	0	0	0
Sufficient Supply?	Yes	Yes	Yes	Yes	Yes

If the City experiences a water shortage or catastrophic supply interruption in the future for any reason, the City will enact more stringent water conservation efforts and/or the appropriate stage of the City's Water Shortage Contingency Plan across the entire service area, including the Project area, to manage and meet demands. The City's 2015 UWMP includes additional details on the City's water conservation program and its Water Shortage Contingency Plan, including the following information:

- A description of stages of action the City will take in response to a water supply shortage;
- A description of non-essential water uses during a water shortage, and water use prohibitions, penalties and consumption reduction methods; and
- An analysis of revenue impacts due to reduced sales during shortages.

1.7.2 Finding of Sufficiency

California Water Code
10910 (c) (4) If the city or county is required to comply with this part pursuant to subdivision (b), the water supply assessment for the project shall include a discussion with regard to whether the total projected water supplies, determined to be available by the city or county for the project during normal, single dry, and multiple dry water years during a 20-year projection, will meet the projected water demand associated with the proposed project, in addition to existing and planned future uses, including agricultural and manufacturing uses.

The City has adequate projected water supplies to meet existing demands and planned future demands plus the maximum anticipated net increase in demand associated with the Project.

The City's projected water supplies for growth projected as a result of the Project are met from a combination of sources. The primary source of existing supply is contractual entitlement from Sonoma Water as defined in the Restructured Agreement. Supply is also provided from the City's groundwater sources, and recycled water.

1.8 Non-Applicable Sections of Water Code 109140 – 10915

The following sections of the Water Code do not apply to this WSA because they are contingent on conditions that do not apply in the City's assessment of water supply for the Project.

California Water Code
10910 (e) If no water has been received in prior years by the public water system, or the city or county if either is required to comply with this part pursuant to subdivision (b), under the existing water supply entitlements, water rights, or water service contracts, the public water system, or the city or county if either is required to comply with this part pursuant to subdivision (b), shall also include in its water supply assessment pursuant to subdivision (c), an identification of the other public water systems or water service contractholders that receive a water supply or have existing water supply entitlements, water rights, or water service contracts, to the same source of water as the public water system, or the city or county if either is required to comply with this part pursuant to subdivision (b), has identified as a source of water supply within its water supply assessments.

10911 (a) If, as a result of its assessment, the public water system concludes that its water supplies are, or will be, insufficient, the public water system shall provide to the city or county its plans for acquiring additional water supplies, setting forth the measures that are being undertaken to acquire and develop those water supplies. If the city or county, if either is required to comply with this part pursuant to subdivision (b), concludes as a result of its assessment, that water supplies are, or will be, insufficient, the city or county shall include in its water supply assessment its plans for acquiring additional water supplies, setting forth the measures that are being undertaken to acquire and develop those water supplies. Those plans may include, but are not limited to, information concerning all of the following:
(1) The estimated total costs, and the proposed method of financing the costs, associated with acquiring the additional water supplies.
(2) All federal, state, and local permits, approvals, or entitlements that are anticipated to be required in order to acquire and develop the additional water supplies.
(3) Based on the considerations set forth in paragraphs (1) and (2), the estimated timeframes within which the public water system, or the city or county if either is required to comply with this part pursuant to subdivision (b), expects to be able to acquire additional water supplies.

10915 The County of San Diego is deemed to comply with this part if the Office of Planning and Research determines that all of the following conditions have been met:

(a) Proposition C, as approved by the voters of the County of San Diego in November 1988, requires the development of a regional growth management plan and directs the establishment of a regional planning and growth management review board.
(b) The County of San Diego and the cities in the county, by agreement, designate the San Diego Association of Governments as that review board.
(c) A regional growth management strategy that provides for a comprehensive regional strategy and a coordinated economic development and growth management program has been developed pursuant to Proposition C.
(d) The regional growth management strategy includes a water element to coordinate planning for water that is consistent with the requirements of this part.
(e) The San Diego County Water Authority, by agreement with the San Diego Association of Governments in its capacity as the review board, uses the association's most recent regional growth forecasts for planning purposes and to implement the water element of the strategy.
(f) The procedures established by the review board for the development and approval of the regional growth management strategy, including the water element and any certification process established to ensure that a project is consistent with that element, comply with the requirements of this part.
(g) The environmental documents for a project located in the County of San Diego include information that accomplishes the same purposes as a water supply assessment that is prepared pursuant to Section 10910.

1.9 Conclusion

California Water Code:
10911 (b) The city or county shall include the water supply assessment provided pursuant to Section 10910, and any information provided pursuant to subdivision (a), in any environmental document prepared for the project pursuant to Division 13 (commencing with Section 21000) of the Public Resources Code.
(c) The city or county may include in any environmental document an evaluation of any information included in that environmental document provided pursuant to subdivision (b). The city or county shall determine, based on the entire record, whether projected water supplies will be sufficient to satisfy the demands of the project, in addition to existing and planned future uses. If the city or county determines that water supplies will not be sufficient, the city or county shall include that determination in its findings for the project.

The City is the public water supplier under SB 610 for the Project.

The water demand for the Project is the increment of increased demand from General Plan 2035 as amended by the 2007 DSASP. Because the net increase in projected demand for the Project was not specifically included in the General Plan and the City 2015 UWMP, the net increase in demand for the Project was calculated as described in **Section 1.5**. The Project net demand projection was added to the City 2015 UWMP demand projection for current and planned uses to determine the overall demand projection.

At this time, the City finds that based on the entire record of its existing water supplies, projected water supplies will be sufficient to meet the present and future demand associated with the Project, in addition to existing and planned future uses.

This WSA is valid as of the date it is approved by the City Council. This WSA is applicable only to the project described in this assessment.

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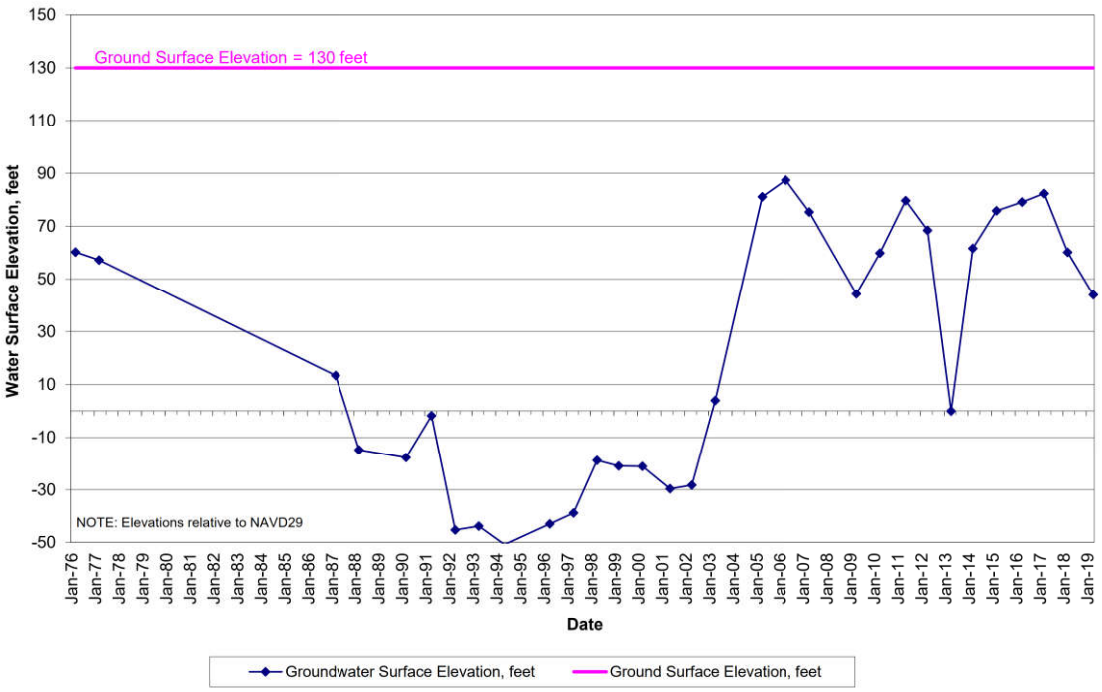
Appendix A

DWR Well Hydrographs

06N/07W-30C1 Historic Spring Groundwater Levels



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Spring GW Levels
Last Revised: January 6, 2020

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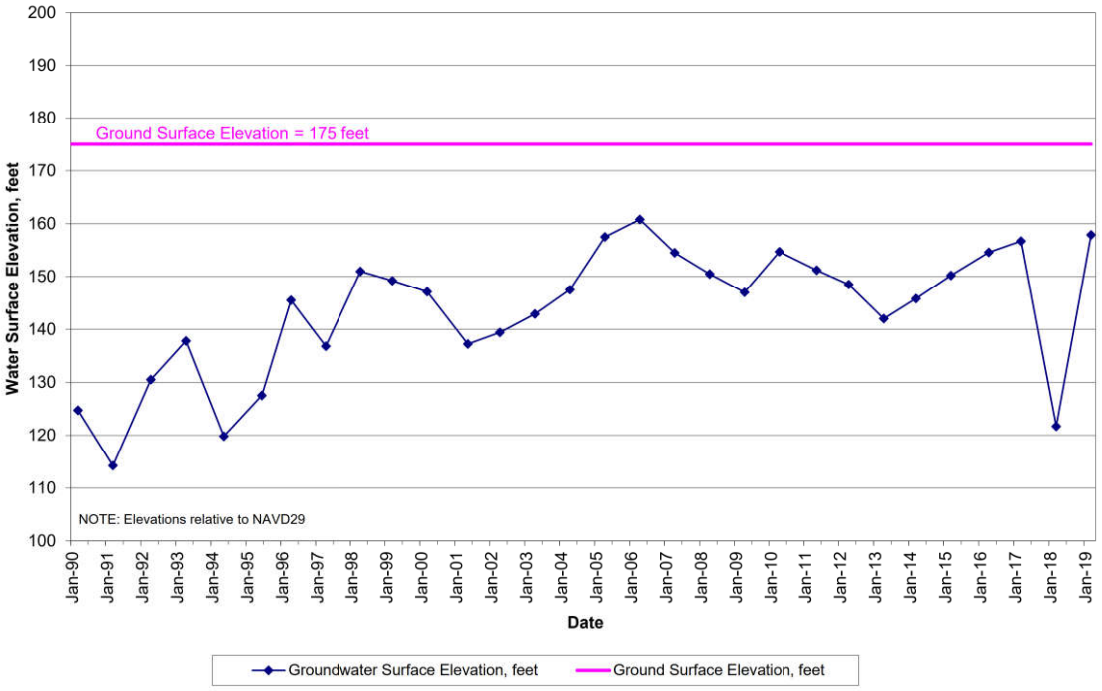
06N/07W-30R1 Historic Spring Groundwater Levels
Well Depth = Shallow



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Last Revised: January 6, 2020

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06N/08W-04Q1 Historic Spring Groundwater Levels

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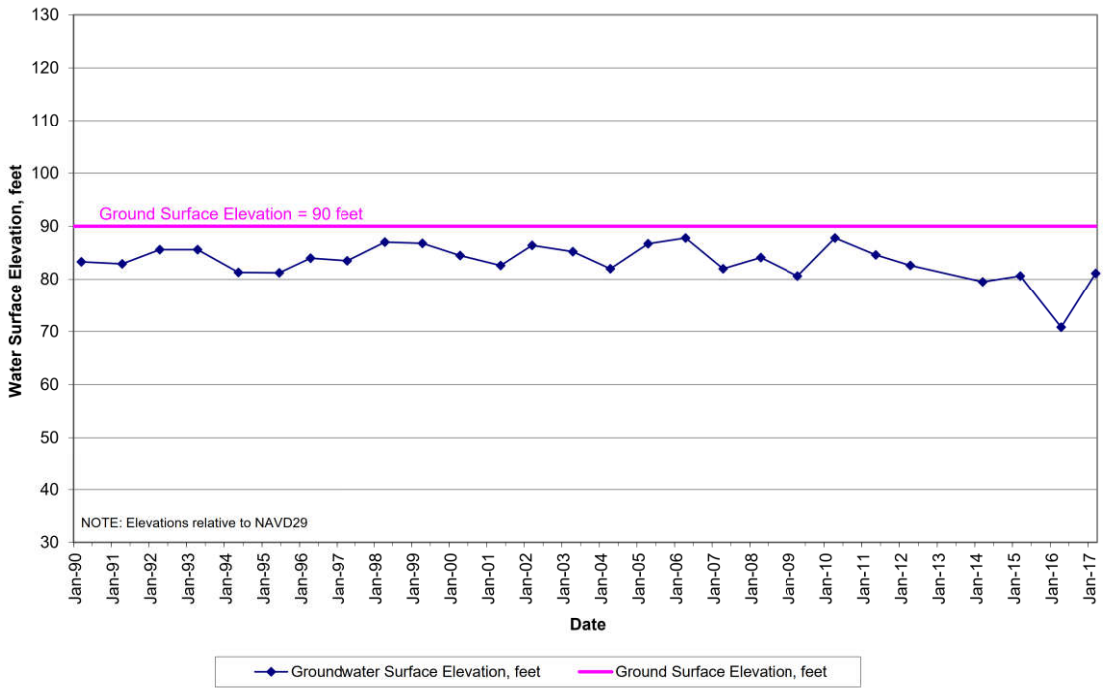

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Last Revised: January 6, 2020

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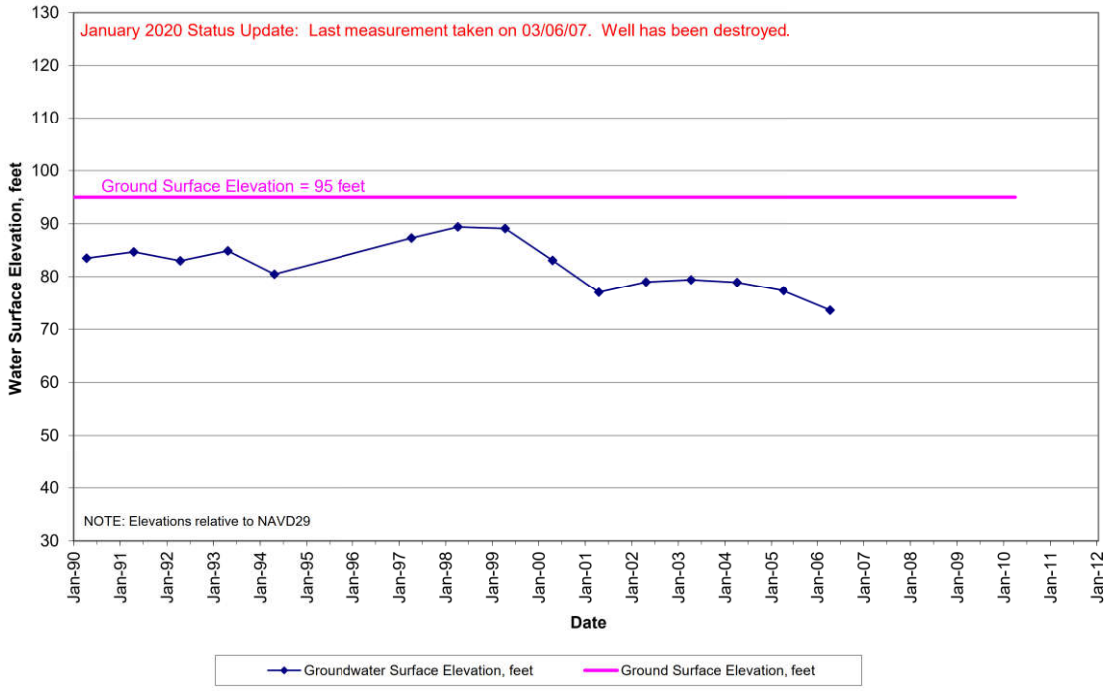

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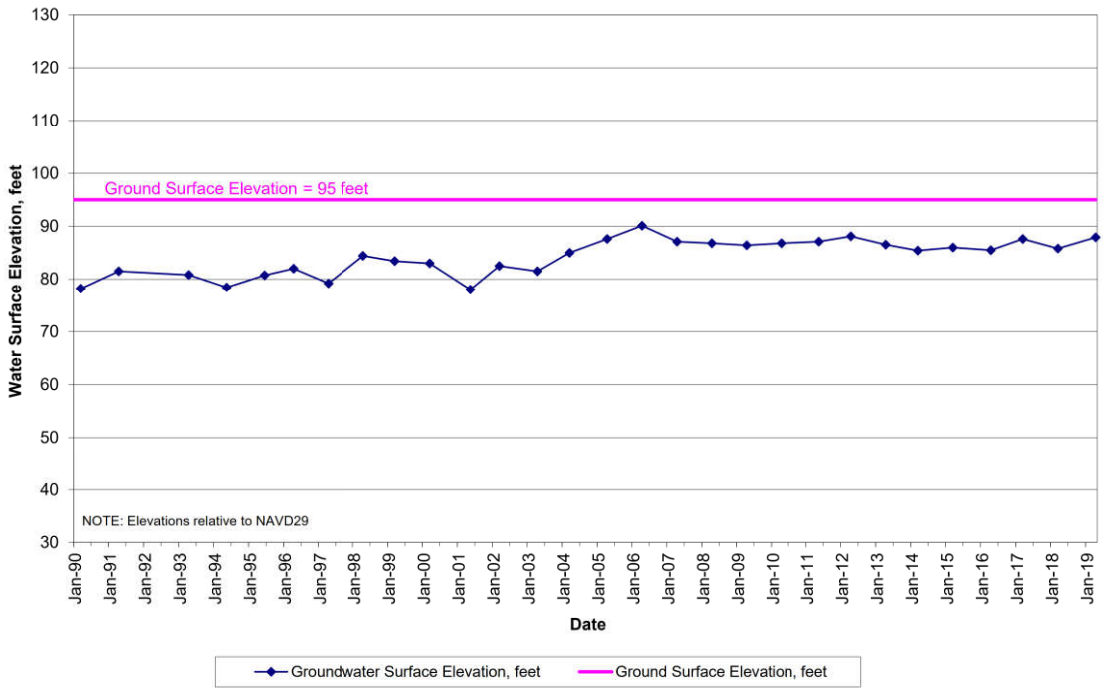

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West Yost Associates

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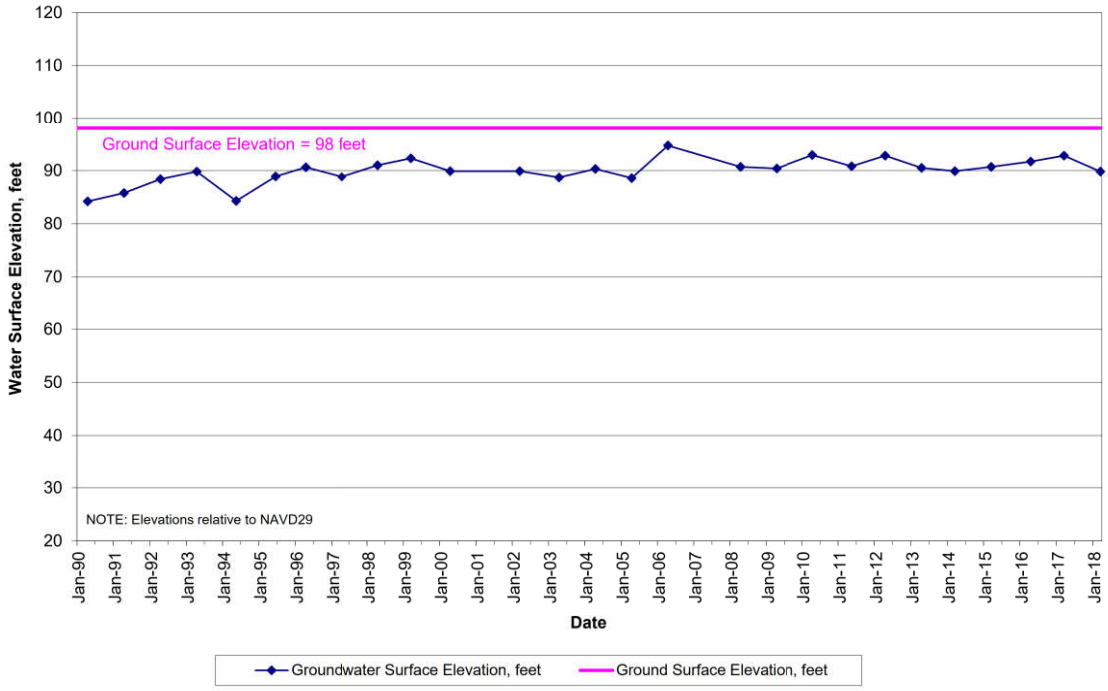

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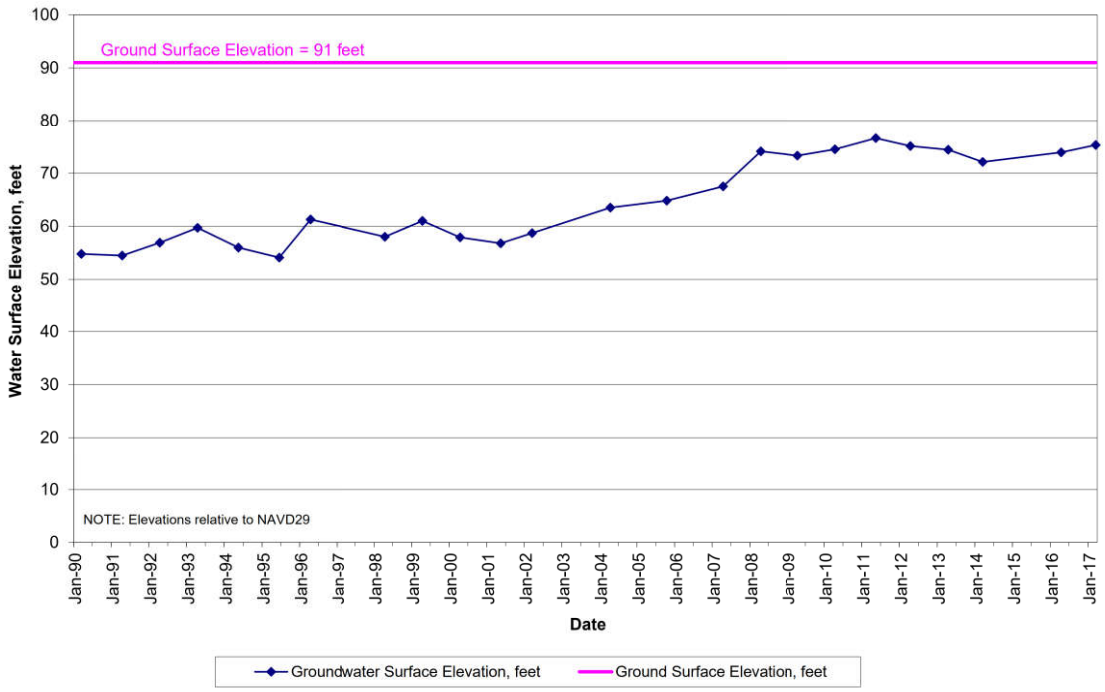

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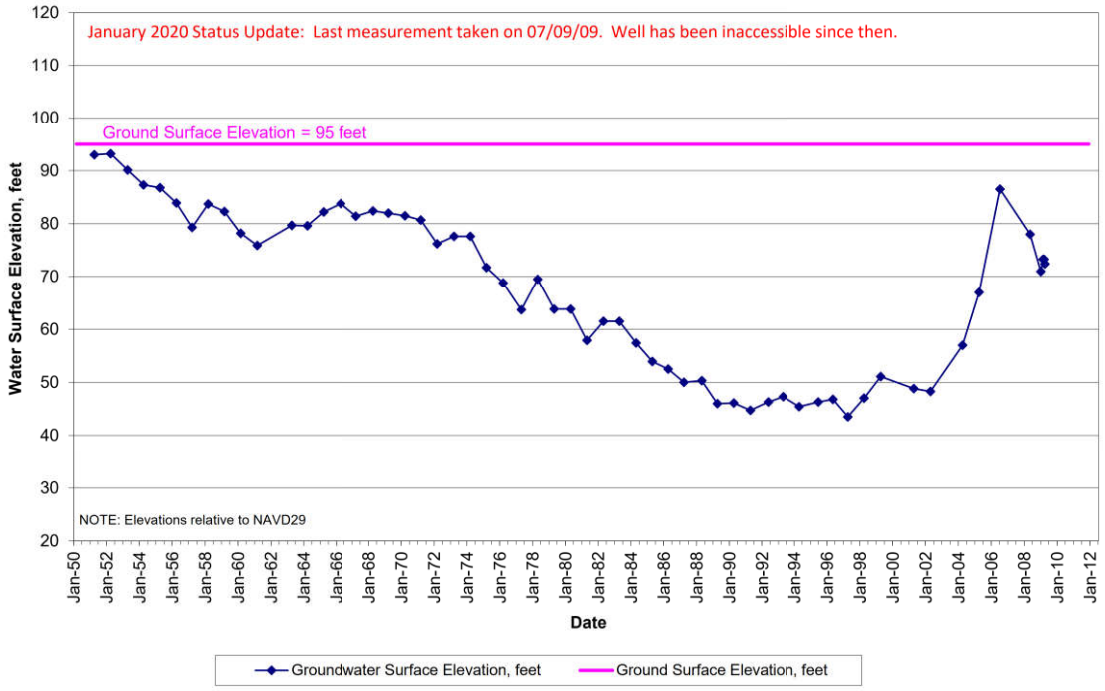

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Last Revised: January 6, 2020

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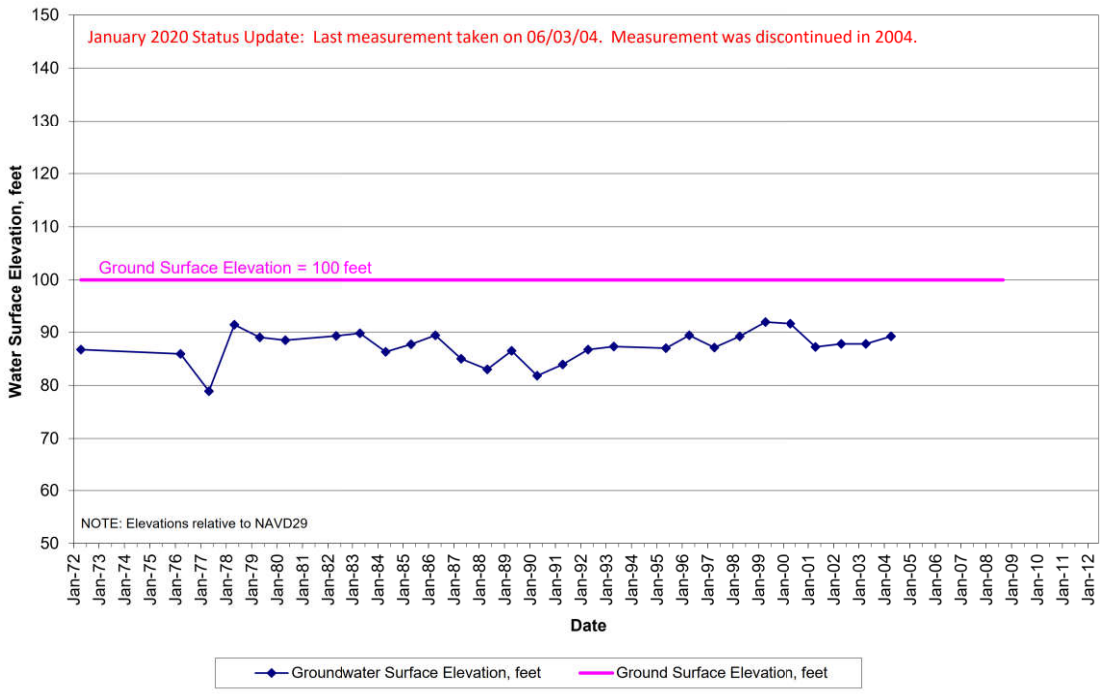

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Last Revised: January 6, 2020

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06N/08W-27H1 Historic Spring Groundwater Levels
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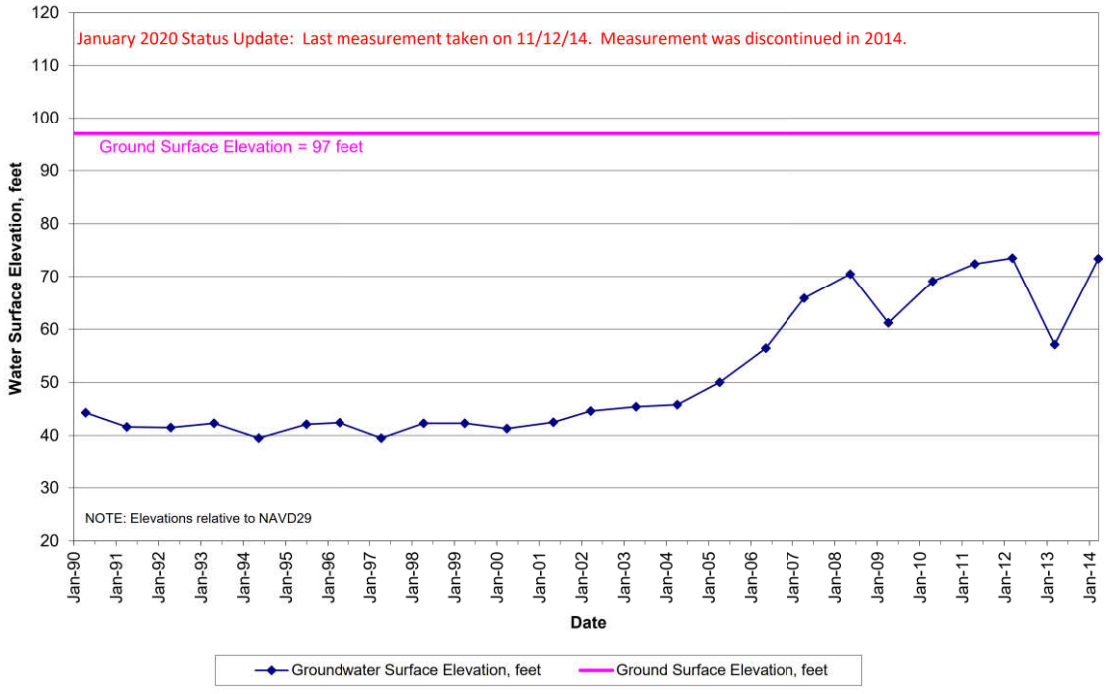

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Last Revised: January 6, 2020

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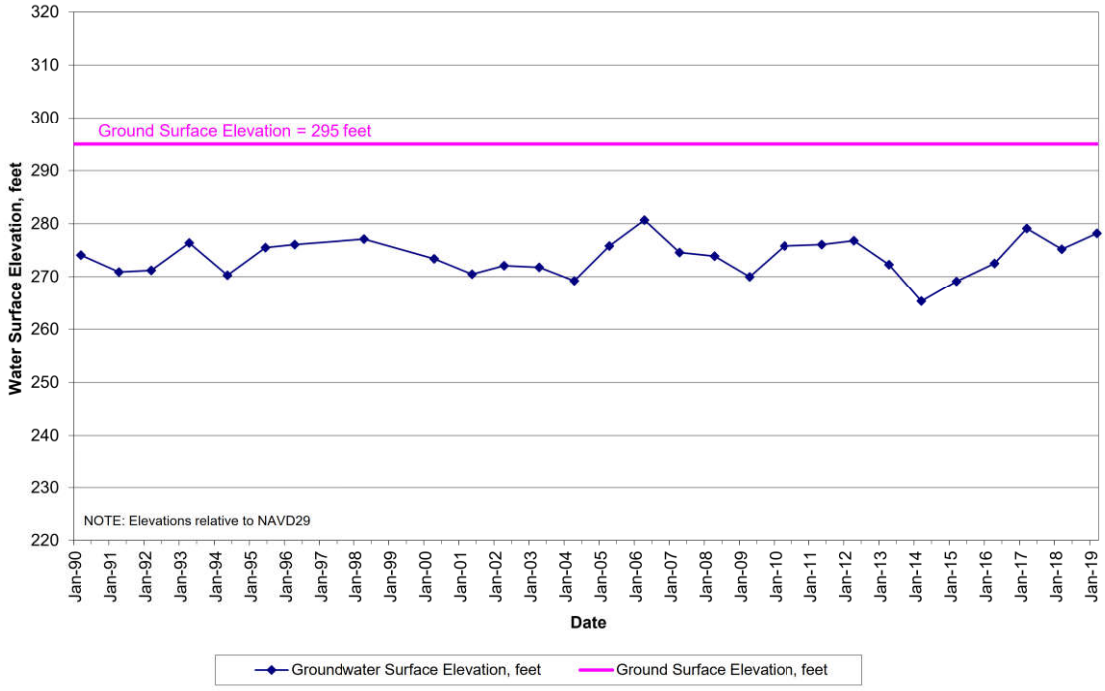
07N/07W-06H2 Historic Spring Groundwater Levels
Rincon Valley Sub Basin



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Last Revised: January 6, 2020

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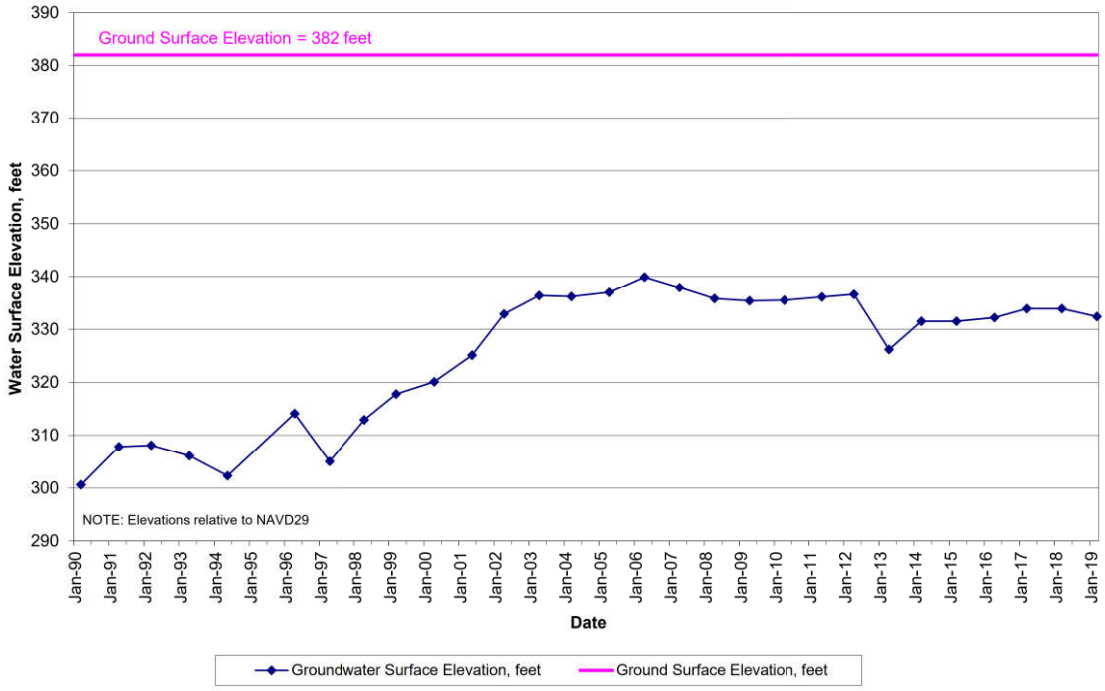

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Last Revised: January 6, 2020

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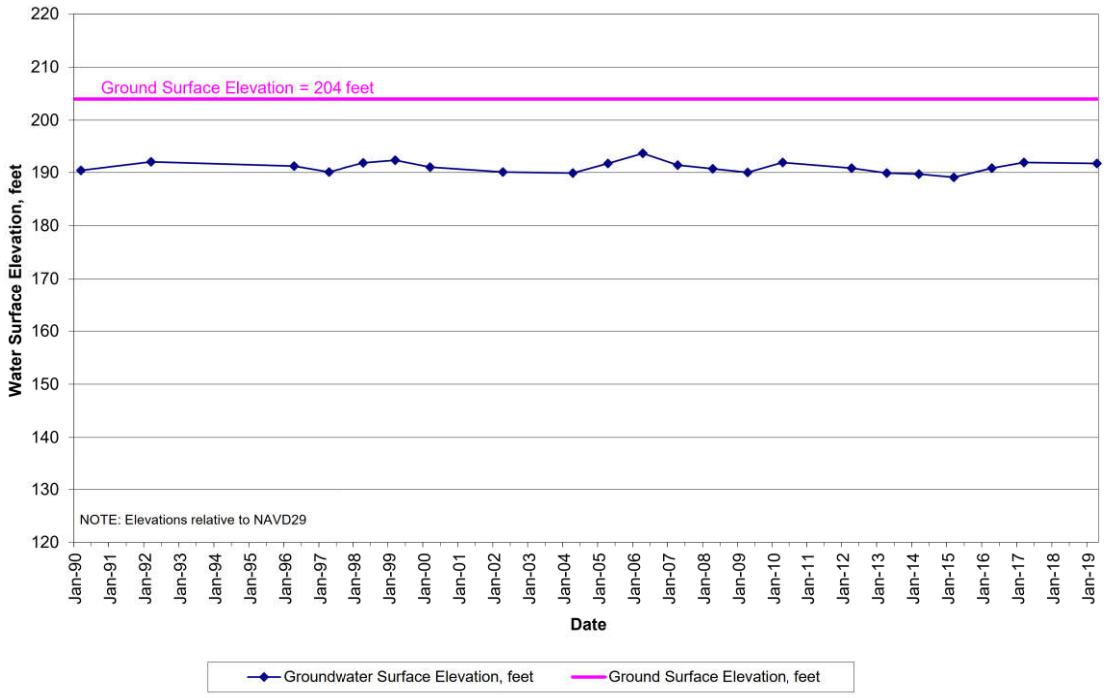
07N/07W-19B1 Historic Spring Groundwater Levels



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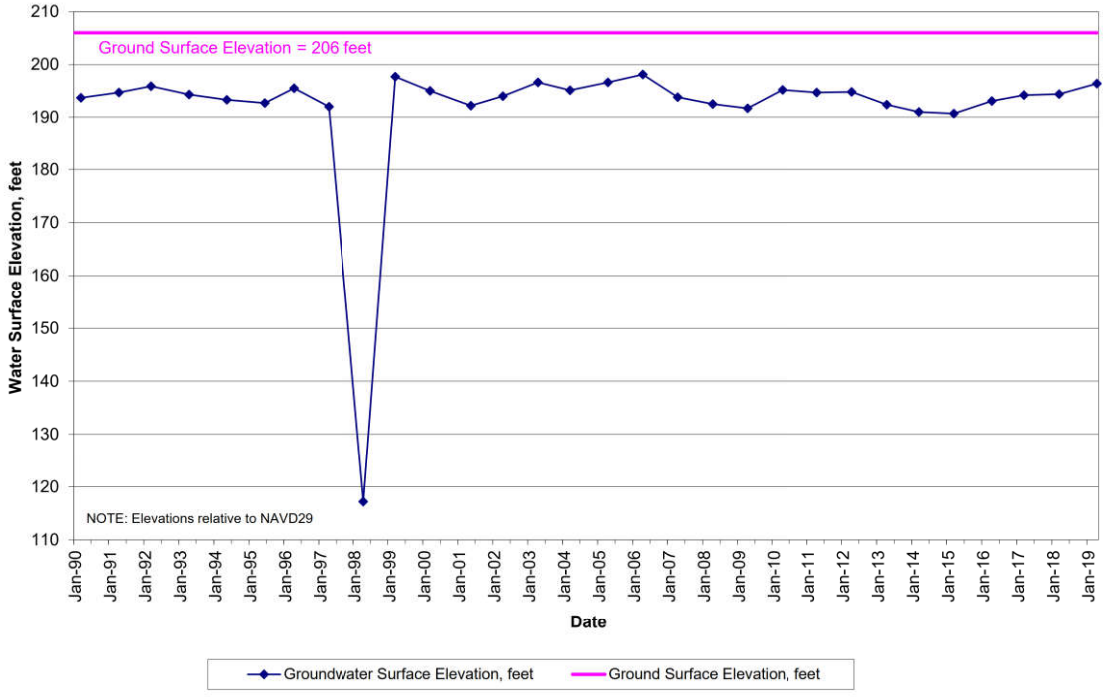

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Last Revised: January 6, 2020

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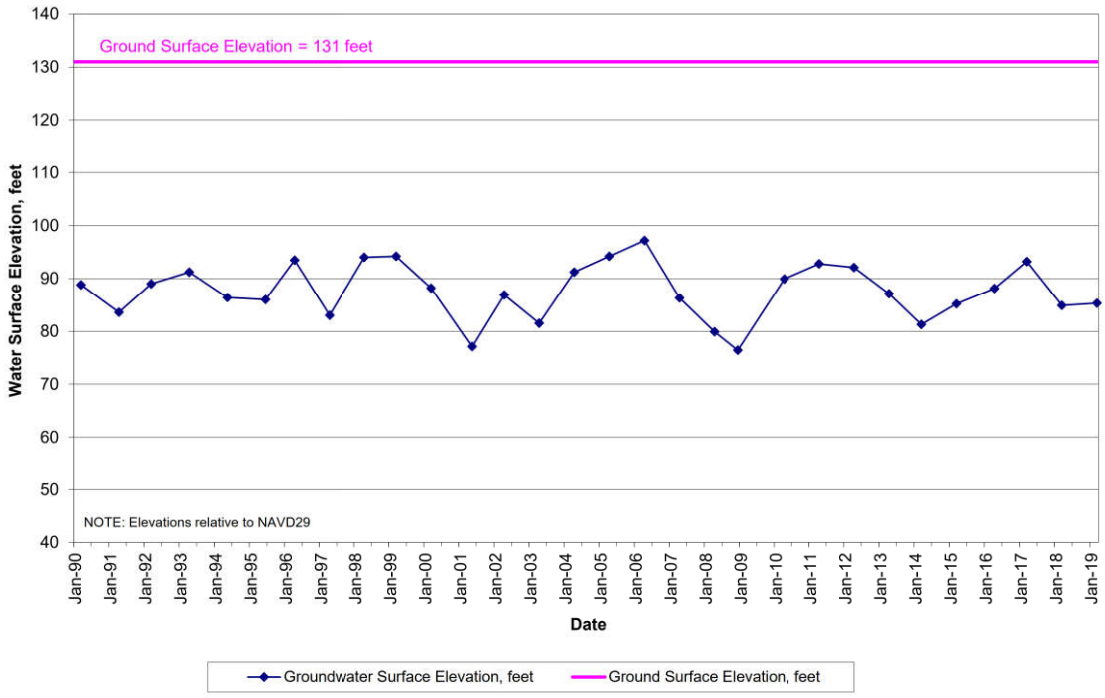

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Last Revised: January 6, 2020

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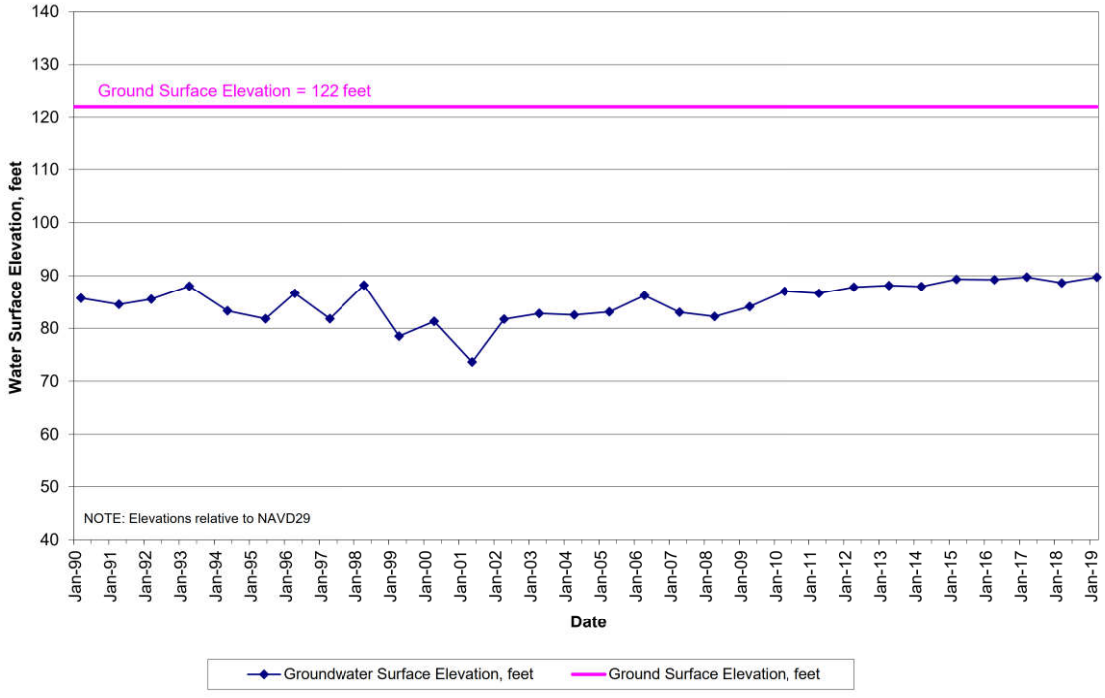
07N/08W-21J1 Historic Spring Groundwater Levels
Well Depth = Shallow/Intermediate



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Last Revised: January 6, 2020

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07N/08W-30K1 Historic Spring Groundwater Levels

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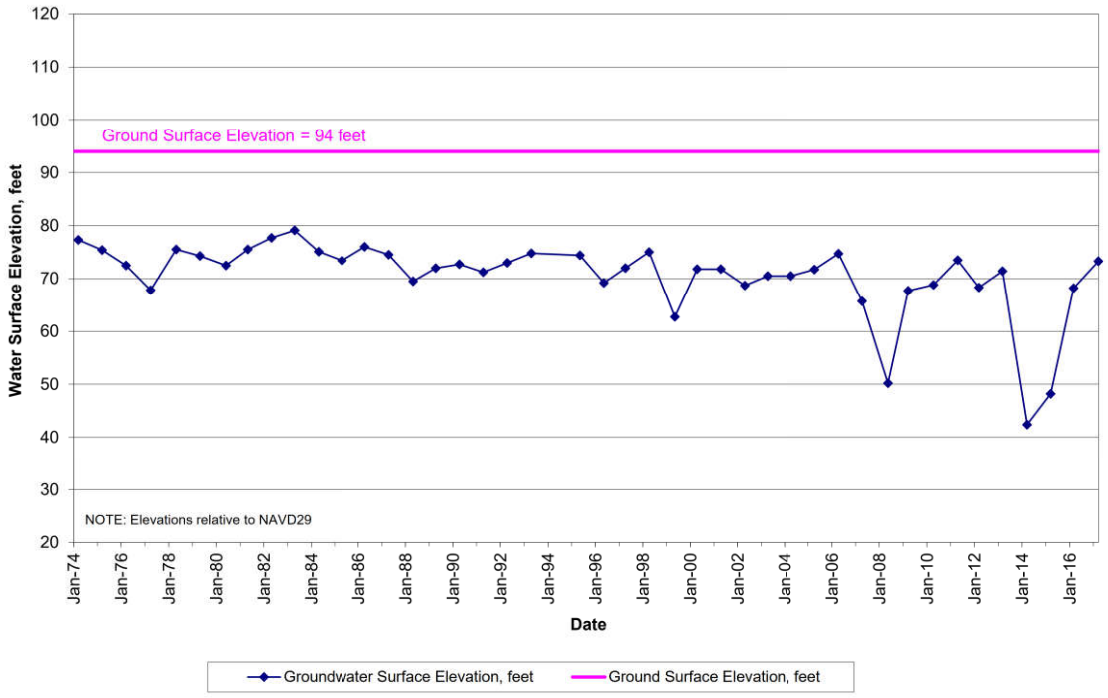

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Last Revised: January 6, 2020

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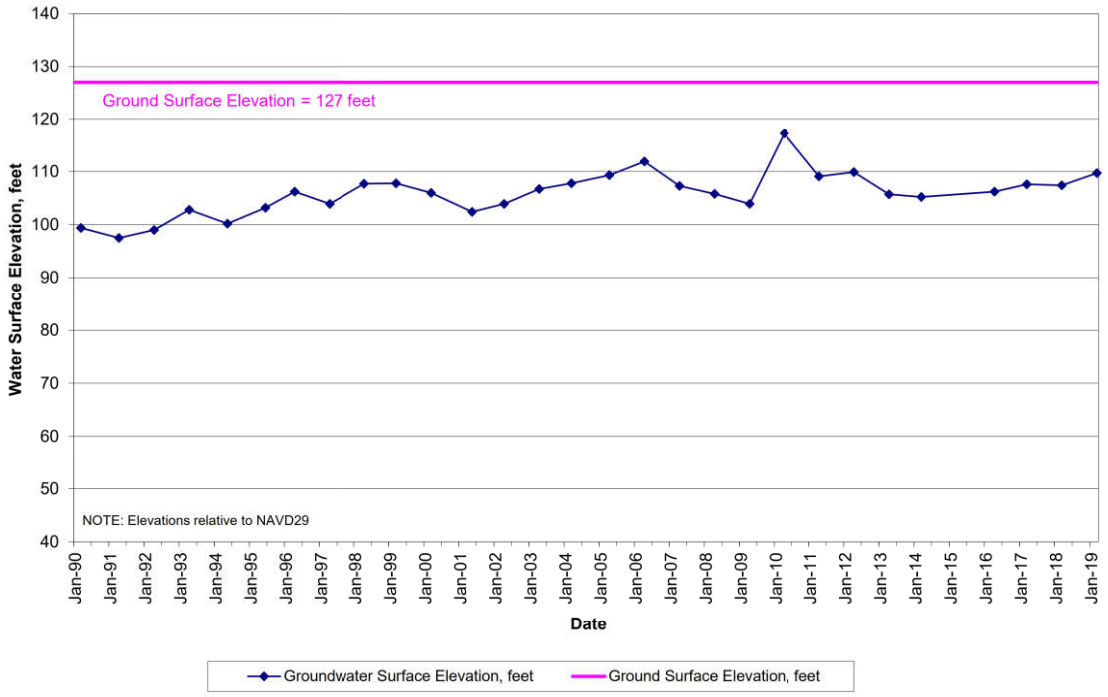
07N/08W-35K1 Historic Spring Groundwater Levels



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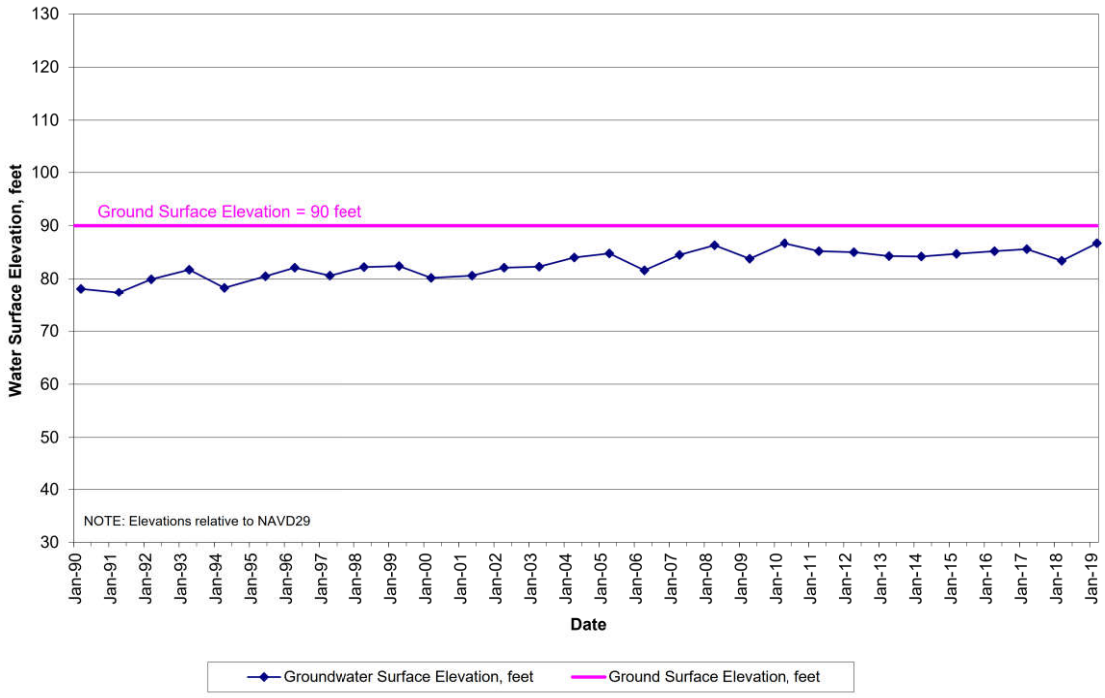
Last Revised: January 6, 2020

West Yost Associates

07N/09W-01C1 Historic Spring Groundwater Levels



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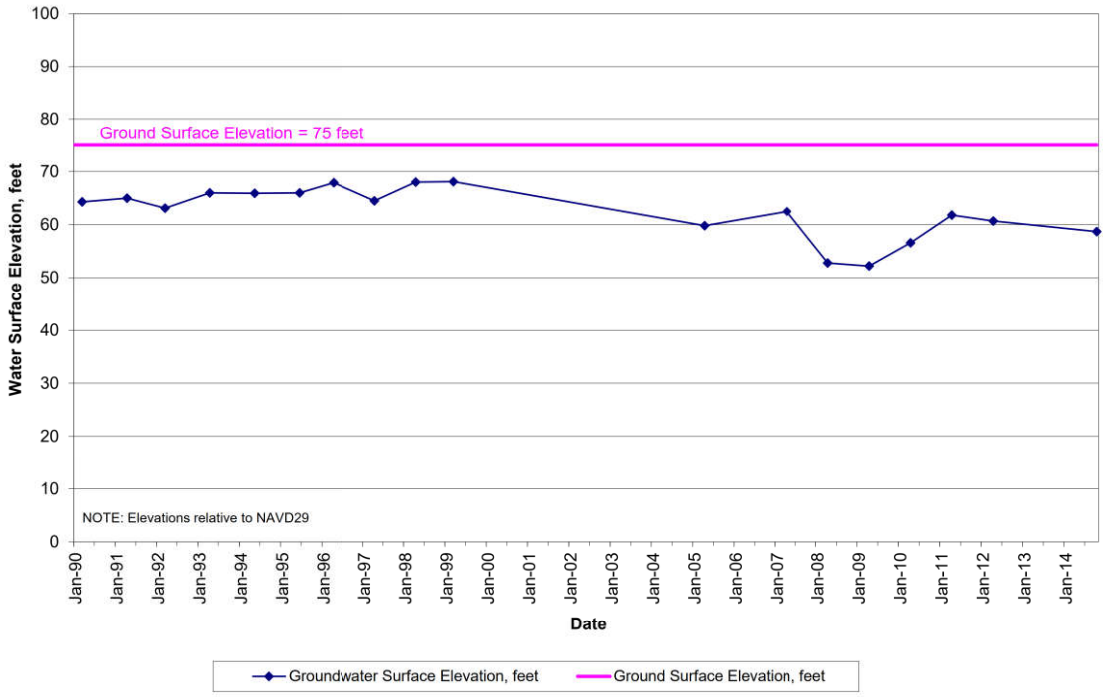
Spring GW Levels
Last Revised: January 6, 2020

West Yost Associates

07N/09W-15K1 Historic Spring Groundwater Levels



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Spring GW Levels
Last Revised: January 6, 2020

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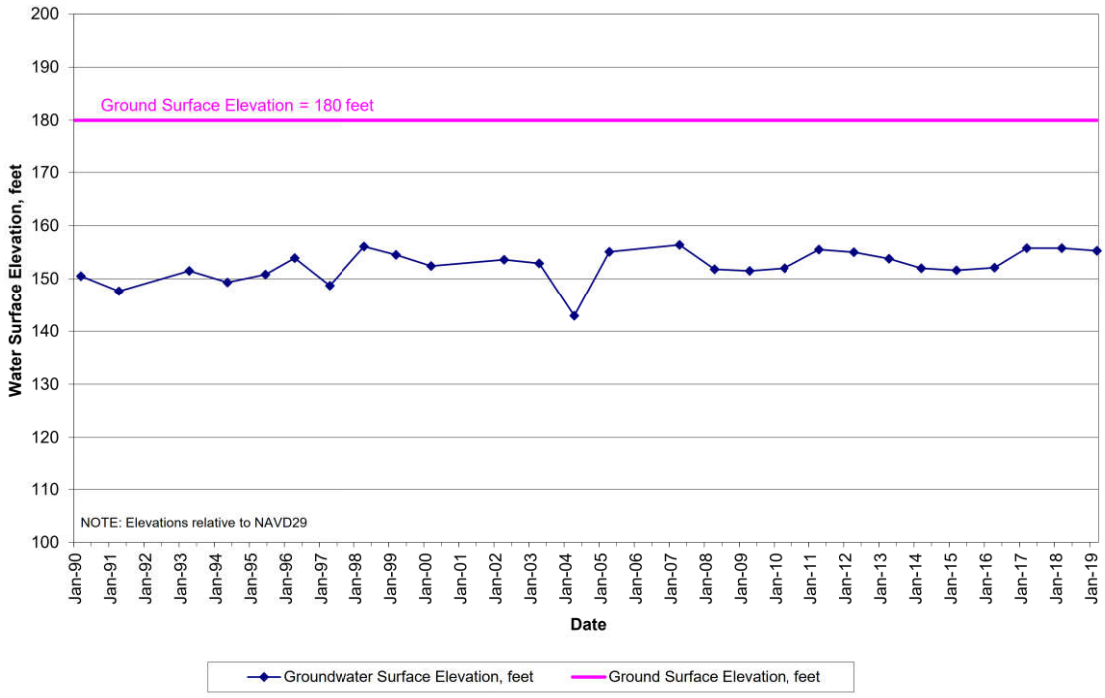
07N/09W-16M1 Historic Spring Groundwater Levels



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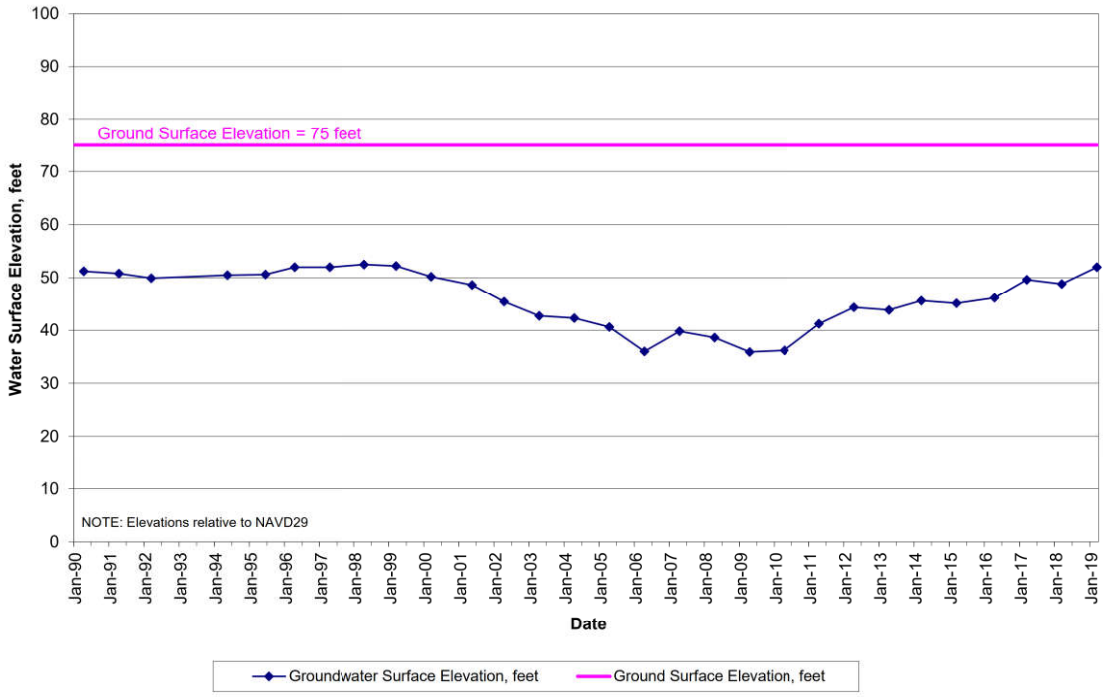
Spring GW Levels
Last Revised: January 6, 2020

West Yost Associates

07N/09W-26P1 Historic Spring Groundwater Levels



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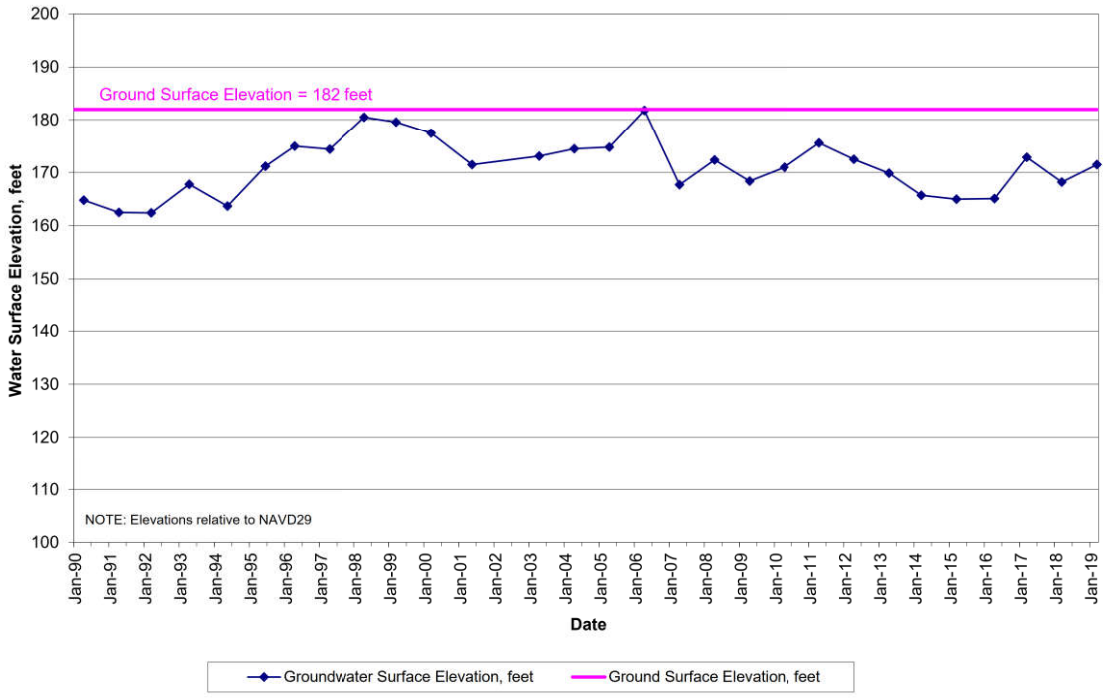
Spring GW Levels
Last Revised: January 6, 2020

West Yost Associates

07N/09W-34F1 Historic Spring Groundwater Levels

Well Depth = Shallow



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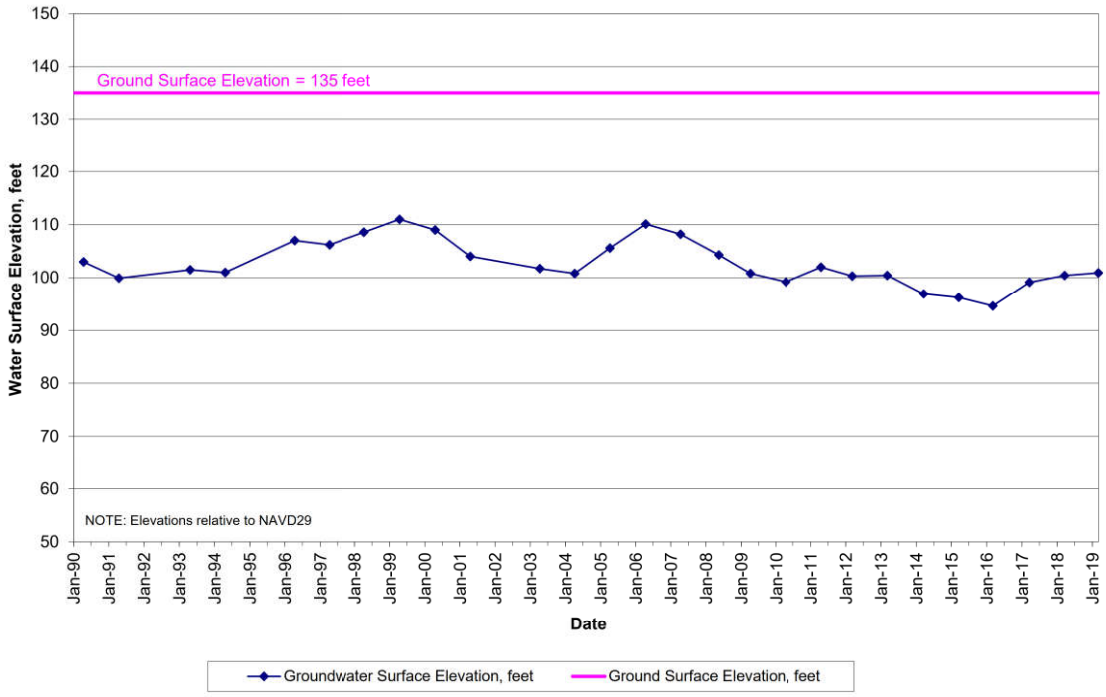
Spring GW Levels
Last Revised: January 6, 2020

West Yost Associates

07N/09W-35D2 Historic Spring Groundwater Levels



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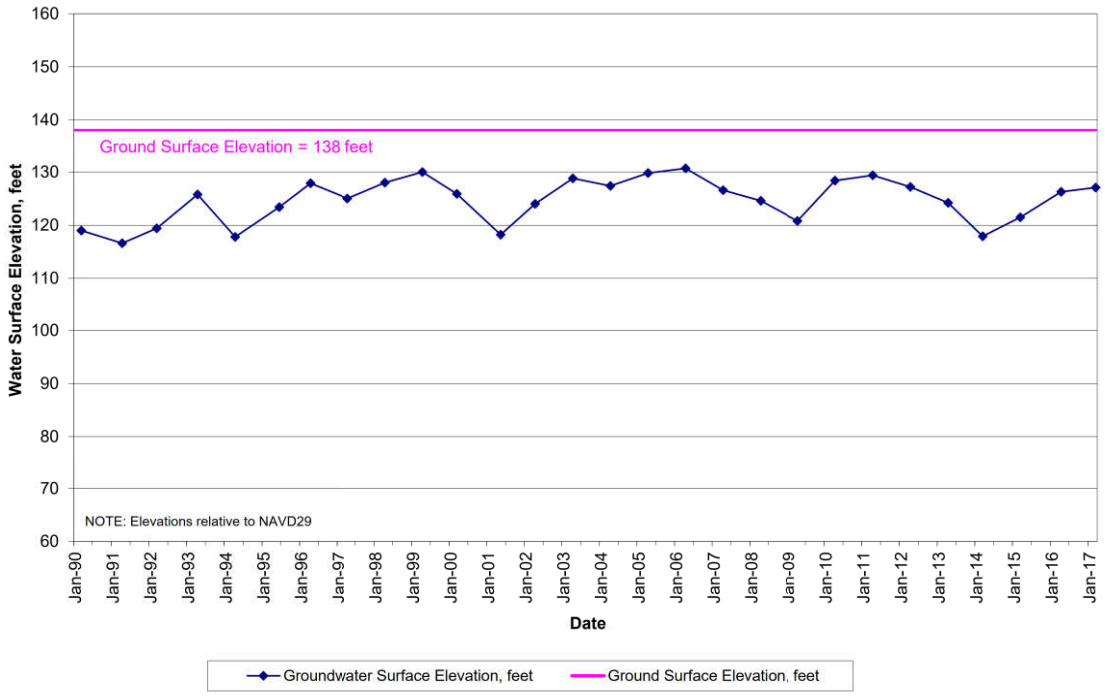
Spring GW Levels
Last Revised: January 6, 2020

West Yost Associates

08N/08W-29B1 Historic Spring Groundwater Levels



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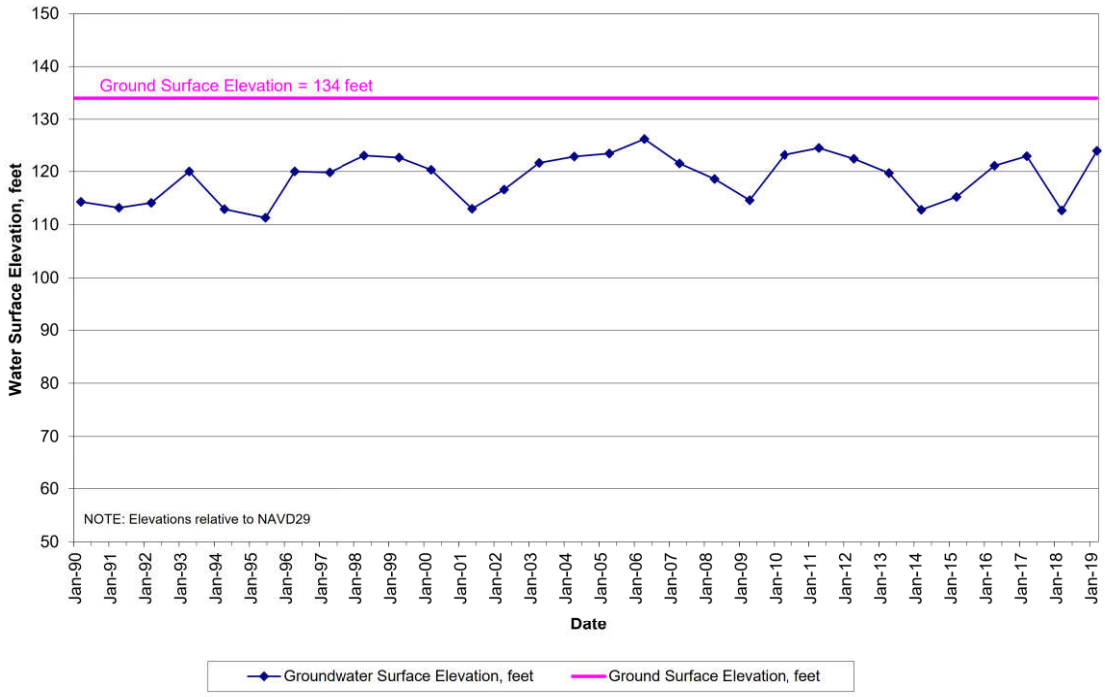
Spring GW Levels
Last Revised: January 6, 2020

West Yost Associates

08N/08W-29C3 Historic Spring Groundwater Levels



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Spring GW Levels
Last Revised: January 6, 2020

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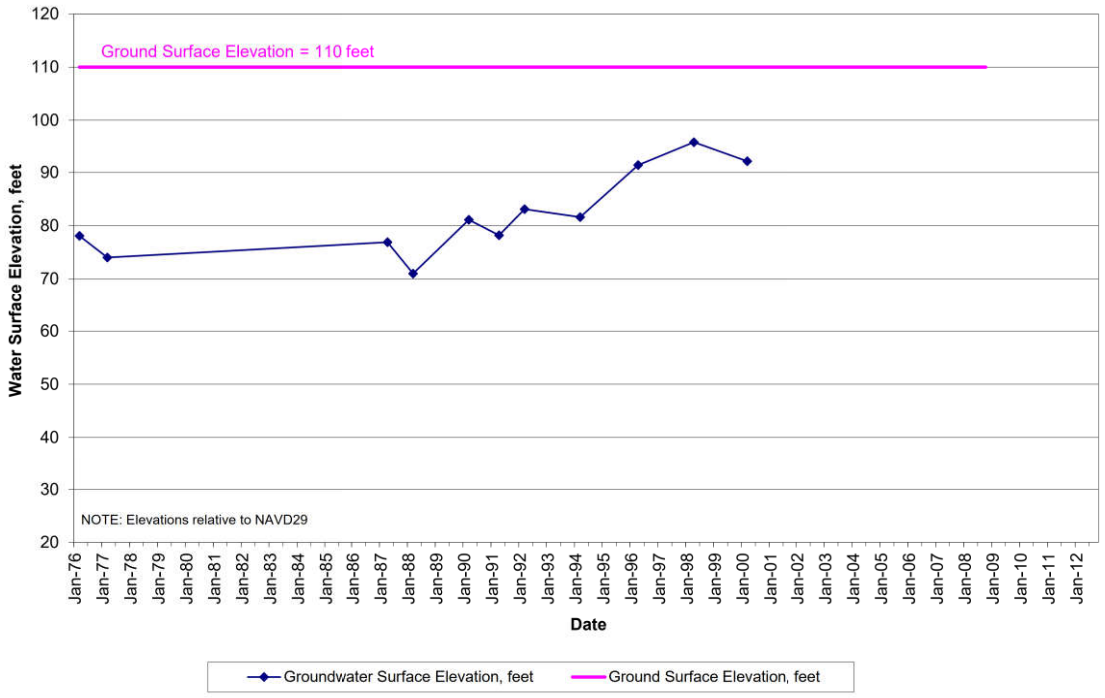
08N/09W-12P1 Historic Spring Groundwater Levels



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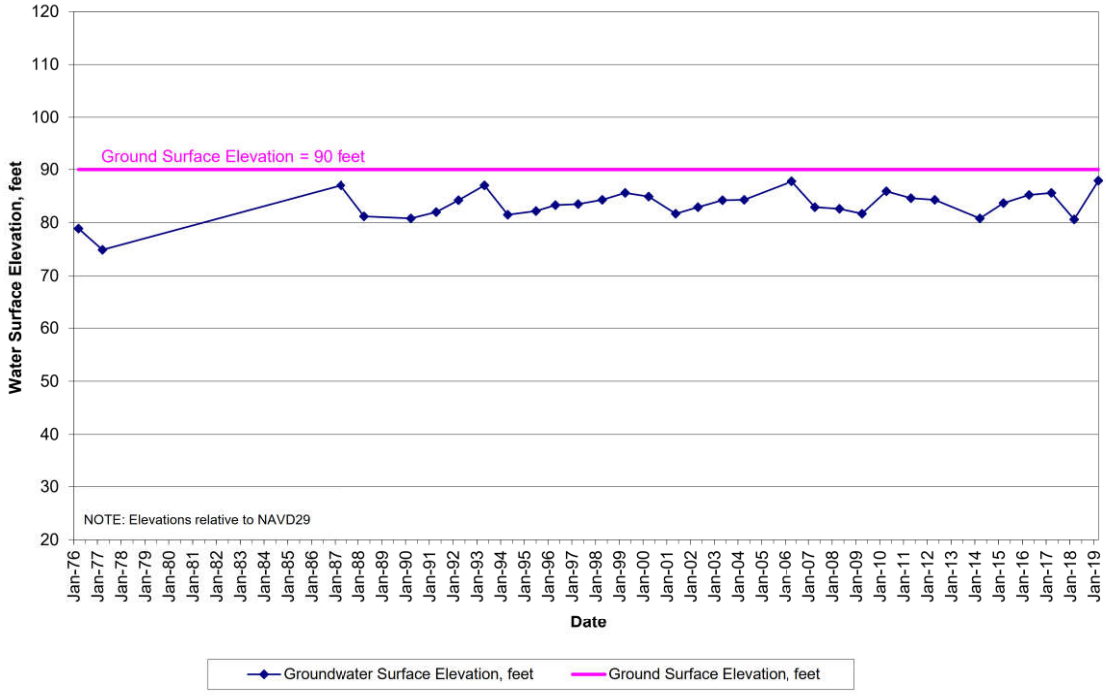
Spring GW Levels
Last Revised: January 6, 2020

West Yost Associates

08N/09W-36N1 Historic Spring Groundwater Levels



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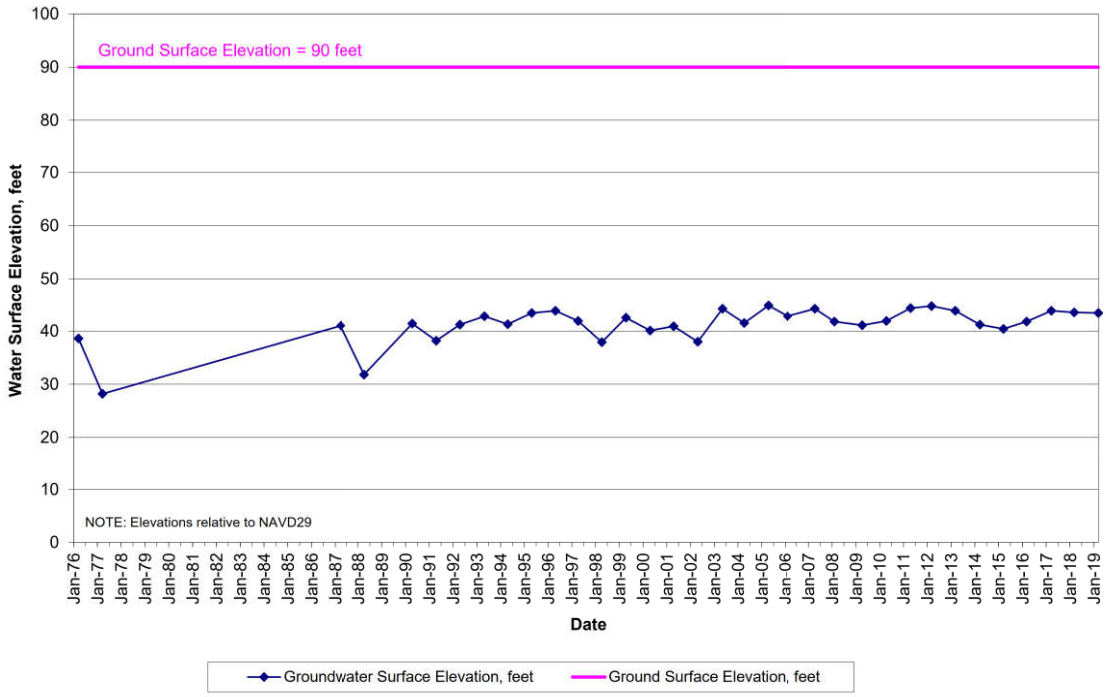
Spring GW Levels
Last Revised: January 6, 2020

West Yost Associates

08N/09W-36P1 Historic Spring Groundwater Levels
Well Depth = 1,048 feet



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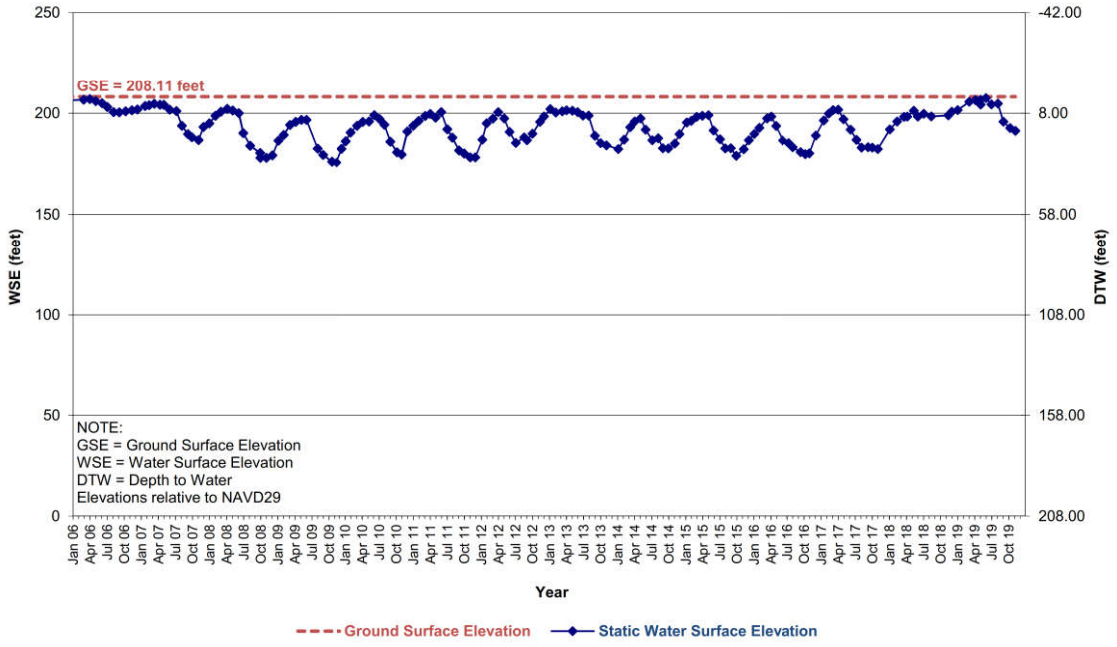
Spring GW Levels
Last Revised: January 6, 2020

West Yost Associates

Appendix B

City of Santa Rosa Well Hydrographs

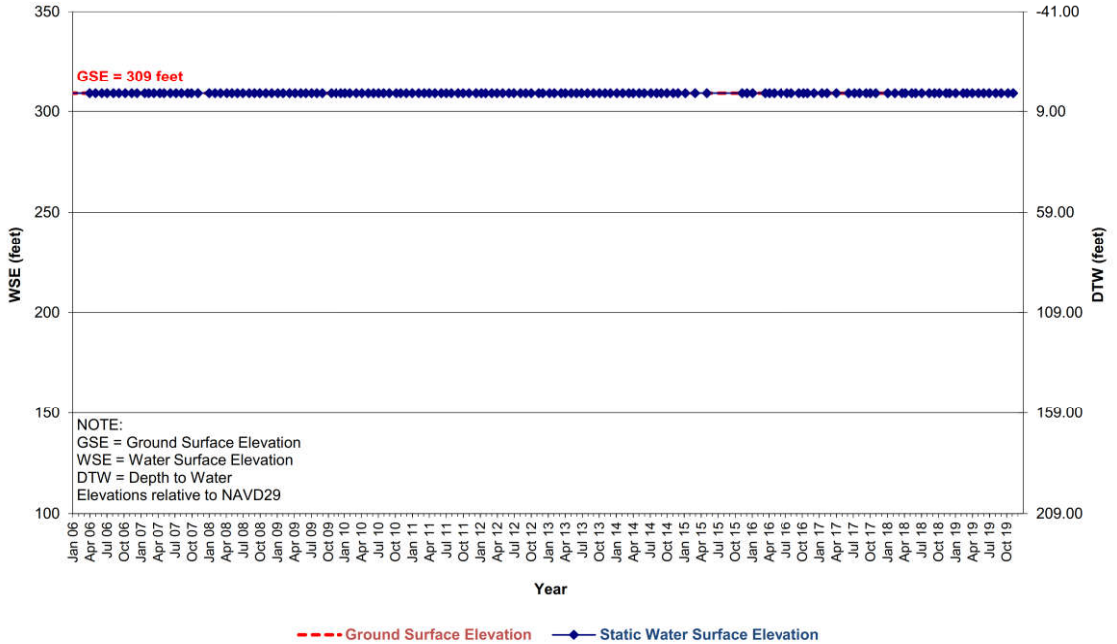
City of Santa Rosa: Groundwater Level Monitoring
Carley Well [4910009-001]
State Well No: T7N/R7W-18R2



Last Revised: January 3, 2020
O:\C\405\02-06-19\E\GW Monitoring\SR_WaterLevel.xlsx [C_CARLEY YR-MONTHLY]

West Yost Associates

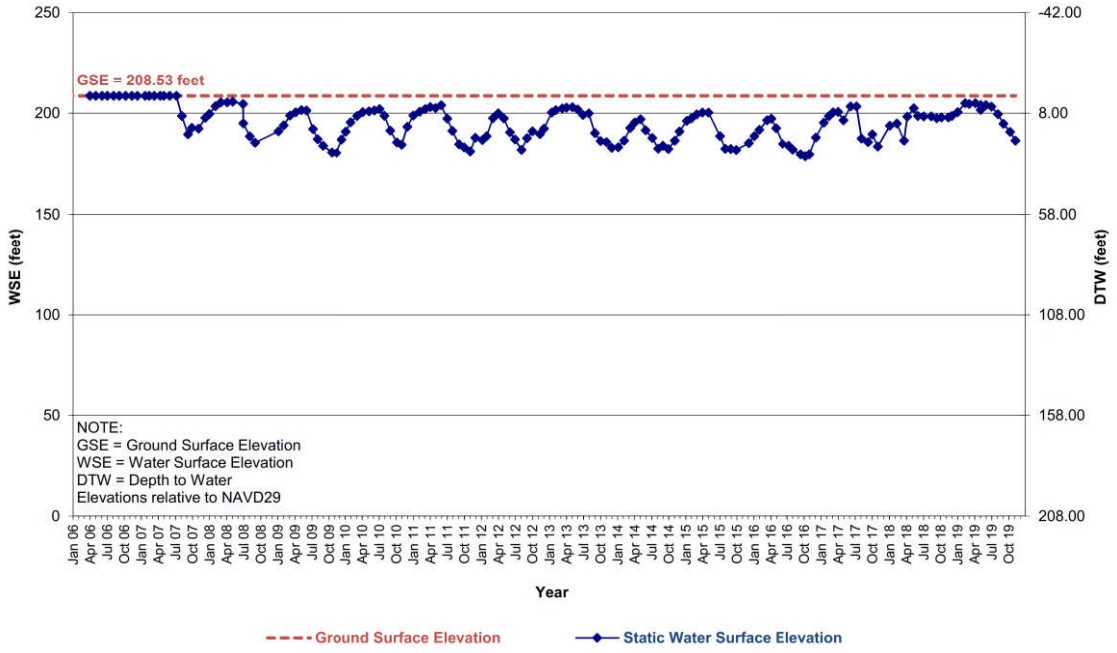
City of Santa Rosa: Groundwater Level Monitoring
Leete Well [4910009-004]
State Well No:



Last Revised: January 3, 2020
O:\C\405\02-06-19\E\GW Monitoring\SR_WaterLevel.xlsx [C_LEETE YR-MONTHLY]

West Yost Associates

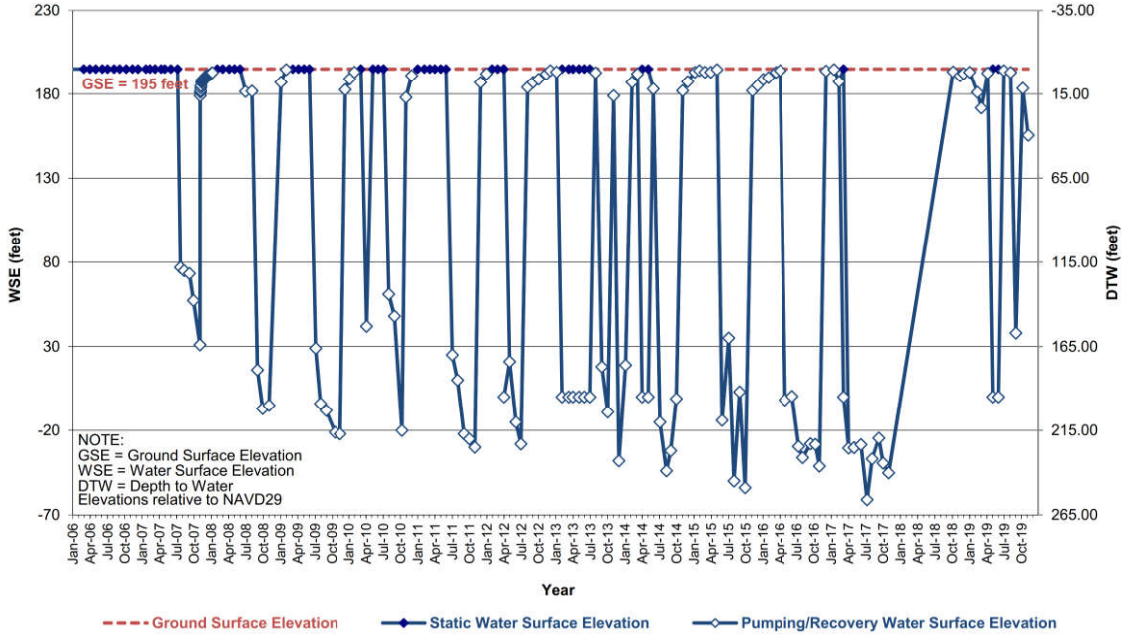
City of Santa Rosa: Groundwater Level Monitoring
Peter Springs Well [4910009-005]
State Well No: T7N/R7W-18R1



Last Revised: January 3, 2020
O:\C\405\02-06-19\E\GW Monitoring\SR_WaterLevel.xlsx [C_PETER SPRINGS YR-MONTHLY]

West Yost Associates

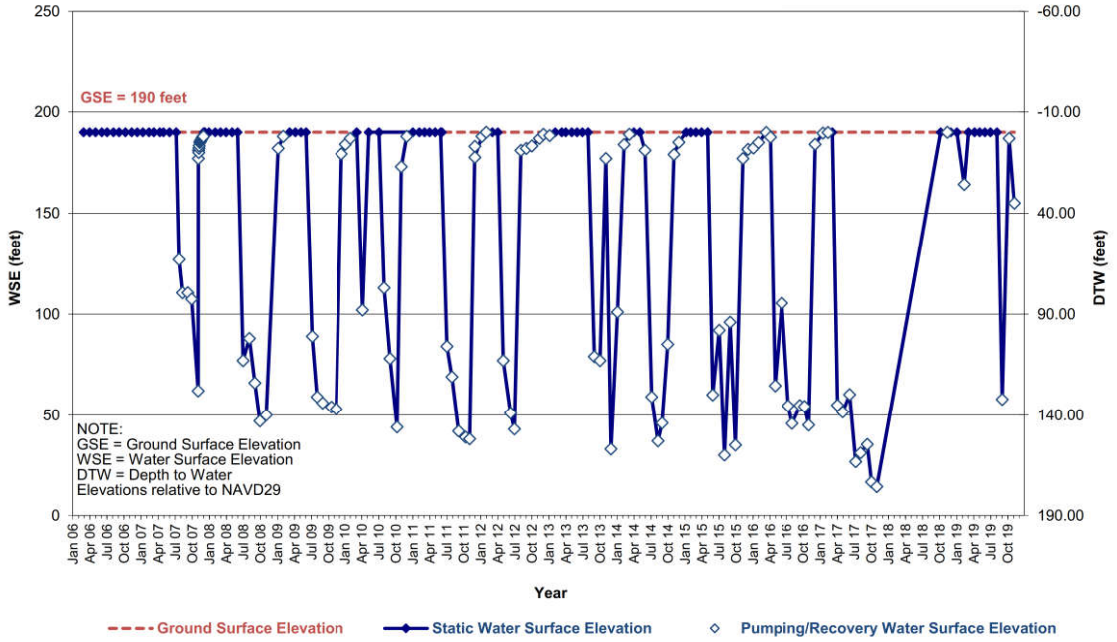
City of Santa Rosa: Groundwater Level Monitoring
Farmers Lane Well 01 [4910009-007]
State Well No: T7N/R8W-24R4



Last Revised: January 3, 2020
O:\C\405\02-06-19\E\GW Monitoring\SR_WaterLevel.xlsx [C_FARMERS LANE 01 YR-MONTHLY]

West Yost Associates

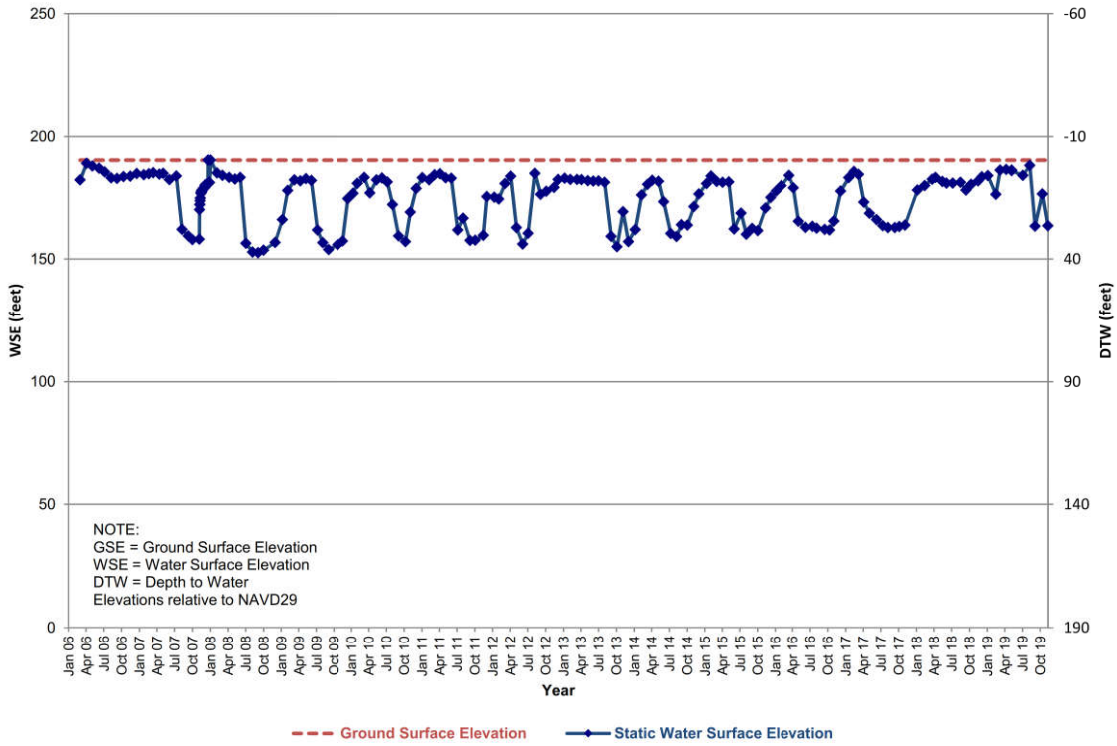
City of Santa Rosa: Groundwater Level Monitoring
Farmers Lane Well 02 [4910009-008]
State Well No: T7N/R8W-24R6



Last Revised: January 3, 2020
O:\C\405\02-06-19\E\GW Monitoring\SR_WaterLevel.xlsx [C_FARMERS LAND 02 YR-MONTHLY]

West Yost Associates

City of Santa Rosa: Groundwater Level Monitoring
Farmers Lane Well 03 [4910009-009]
State Well No: T7N/R8W-24R5



Last Revised: January 6, 2020
O:\C\405\02-11-32\E\Farmers Lane 3

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