

Water Quality and Recycled Water Supply Feasibility Study

PREPARED FOR

Russian River County Sanitation District



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Project No. 798-50-24-05

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Date

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Date

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LIST OF ACRONYMS AND ABBREVIATIONS

AAF	Annual Average Flow
ADWF	Average Dry Weather Flow
AF	Acre-Feet
AFY	Acre-Feet per Year
BNR	Biological Nutrient Removal
BOD	Biological Oxygen Demand
CCB	Chlorine Contact Basin
CIMIS	California Irrigation Management Information System
CIWQS	California Integrated Water Quality System
DAC	Disadvantaged Community
DDW	Division of Drinking Water
DI	Ductile Iron
ECA	Enhanced Compliance Action
EQ	Equalization
ESD	Equivalent Single-Family Dwelling
Feasibility Study	Water Quality and Recycled Water Supply Feasibility Study
FEMA	Federal Emergency Management Agency
FTE	Full-Time Equivalent
FWD	Forestville Water District
GCSO	Graton Community Services District
GIS	Geographic Information System
gpd	Gallon per Day
I&I	Inflow and Infiltration
Laguna WWTP	Regional Laguna WWTP
lb/day	Pound per Day
MABR	Membrane Aerated Biofilm Reactor
MBR	Membrane Bioreactor
MG	Million Gallon
mg/L	Milligram per Liter
mgd	Million Gallon per Day
MHI	Median Household Income
MLSS	Mixed Liquor Suspended Solids
NPDES	National Pollutant Discharge Elimination System
NTU	Nephelometric Turbidity Unit
O&M	Operations and Maintenance
OCSD	Occidental County Sanitation District
OPCC	Opinion of Probable Capital Cost
OPTCC	Opinion of Probable Total Capital Cost
OWTS	On-Site Wastewater Treatment System
PDF	Peak Day Flow

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PVC	Polyvinyl Chloride
RCP	Representative Concentration Pathways
Regional Water Board	North Coast Regional Water Quality Control Board
RRCSD	Russian River County Sanitation District
SAF	Suspended Air Flotation
Santa Rosa	City of Santa Rosa
Settlement Agreement	<i>Settlement Agreement and Stipulation for Entry of Order No. R1-2023-0049</i>
SMR	Self-Monitoring Report
Sonoma Water	Sonoma County Water Agency
SRT	Solids Retention Time
SSO	Sanitary Sewer Overflow
State Water Board	California State Water Resources Control Board
TM	Technical Memorandum
TMDL	Total Maximum Daily Load
TSO	Time Schedule Order
TSS	Total Suspended Solids
UV	Ultraviolet Light
WAS	Waste Activated Sludge
West County	Western Sonoma County
Windsor	Town of Windsor
WWTP	Wastewater Treatment Plant

CHAPTER 1

Introduction

The Russian River County Sanitation District (RRCSD) has prepared this Water Quality and Recycled Water Supply Feasibility Study (Feasibility Study) to evaluate potential regional wastewater management solutions for both sewered and unsewered communities in western Sonoma County (West County). This section introduces this study effort under the following headings:

- Regulatory Background
- Study Approach
- Study Area
- Report Overview

1.1 REGULATORY BACKGROUND

On December 13, 2023, the North Coast Regional Water Quality Control Board (Regional Water Board) entered into a *Settlement Agreement and Stipulation for Entry of Order No. R1-2023-0049* (Settlement Agreement)¹ with Sonoma County Water Agency (Sonoma Water) and RRCSD. The Settlement Agreement defines an Enhanced Compliance Action (ECA) that must be completed by RRCSD as follows:

The ECA project (Project) titled "West County Water Quality and Recycled Water Supply Feasibility Project with Stakeholder Committee" consists of conducting a high-level feasibility study to evaluate potential regional projects that could improve water quality, water supply reliability, Pathogen TMDL compliance², and climate change resiliency in the Russian River watershed, and address ratepayer costs for West County wastewater systems by exploring the cost savings of regionalization. The feasibility study would be coupled with a stakeholder program to help inform and identify community support for potential regional solutions to the many wastewater challenges and water resource opportunities in west Sonoma County. The primary deliverable will be a Final Feasibility Study Report with data needed to make informed decisions for a future of resiliency supporting long-term improvements and short-term pathogen TMDL implementation. This ECA project will investigate creating regional wastewater treatment and reuse systems for more reliable and cost-effective services, study water recycling systems and pipelines, survey wastewater connection and consolidation opportunities for onsite wastewater treatment systems, and explore employing increased climate change resiliency.

This document fulfills the Draft Feasibility Study Report requirement of the ECA. Sonoma Water has conducted a stakeholder engagement process in parallel with preparation of the Feasibility Study technical analysis.

Feedback from the stakeholder engagement program was incorporated into a November 2025 version of the Draft Feasibility Study Report, where relevant. This March 2026 version of the Draft Feasibility Study Report includes additional refinements made to incorporate additional feedback received from the stakeholder group based on their review of the November 2025 Draft Feasibility Study Report. The

¹ The Settlement Agreement had been developed to address actions required following three sanitary sewer overflow (SSO) events that violated provisions within the previous discharge permit for the RRCSD Wastewater Treatment Plan (WWTP) (Regional Water Board Order No. R1-2014-0002).

² The Regional Water Board established the Pathogen TMDL for the Russian River on July 10, 2020. In 2015, the Russian River was listed as being impaired related to bacteria (e.g. pathogens). The Pathogen TMDL was adopted to address pathogens from specific controllable pathogen sources, which include treated municipal wastewater and untreated wastewater from sanitary sewer systems and Onsite Wastewater Treatment Systems (OWTSs).

stakeholder comments received based on review of the November 2025 version of the Draft Feasibility Study Report are included as Appendix I. A Final Feasibility Study Report will be prepared based on Regional Board input. Completion of the final report is anticipated in May 2026, following receipt of Regional Water Board comments on the draft report.

1.2 STUDY APPROACH

The goal for this Feasibility Study is to identify the wastewater treatment and major conveyance infrastructure that would potentially be needed to support regionalization of wastewater treatment within the West County area. Detailed analysis, including defining the specific collection system infrastructure required within currently unsewered areas and design-level evaluations, are outside the scope of this work. Within that framework, the Feasibility Study is structured around a systematic, two-phase process. In the first phase, alternatives for regionalizing wastewater treatment for the four existing wastewater agencies of interest that serve the West County area were identified, screened and evaluated. These four agencies of interest are as follows:

- RRCSD
- Forestville Water District (FWD)
- Graton Community Services District (GCSD)
- Occidental Community Services District (OCSD)

In the first phase, eight potential alternatives were identified and screened to define five feasible alternatives.³ The second phase of the evaluation involved further analysis of these five preferred alternatives to include the infrastructure required to receive, treat and recycle wastewater from nearby unsewered areas.

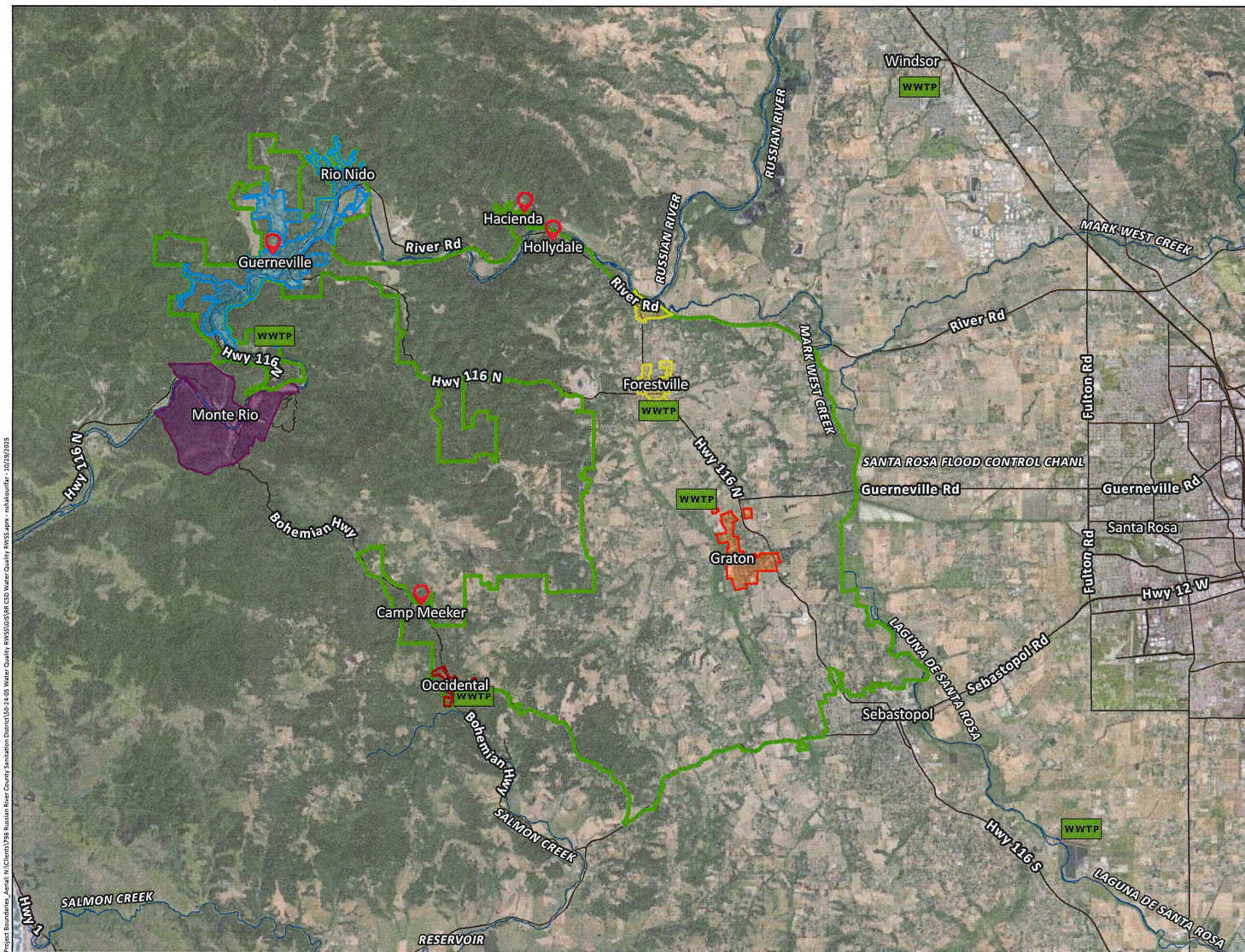
1.3 STUDY AREA

The Study Area is shown on Figure 1-1. This area encompasses the existing service areas of the four existing West County wastewater agencies of interest, as well as currently unsewered parcels that are near the existing service areas or along major roadways that connect the existing service area. In accordance with the Settlement Agreement, the Study Area also includes the following economically disadvantaged communities (DACs):

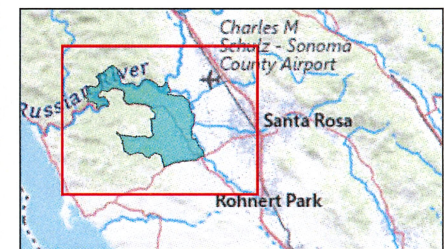
- Hacienda
- Hollydale
- Camp Meeker
- Guerneville⁴

³ Feasible alternatives refer to potentially viable, lower cost, and higher qualitative ranking regionalization approaches. Defining a project that will ultimately be implemented will need to include additional engineering analysis and assessment of governance and financing feasibility that are outside the scope of this technical feasibility study.

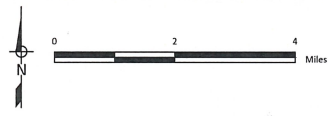
⁴ Most of the unincorporated area of Guerneville is included within the RRCSD service area.



- Study Area
- Monte Rio & Villa Grande Study Area
- Russian River CSD Service Area
- Occidental CSD Service Area
- Forestville WD Service Area
- Graton CSD Service Area
- WWTP Wastewater Treatment Plant
- 📍 Unsewered Communities of Interest



Prepared by:
WEST YOST



Prepared for:
 Russian River County Sanitation District
 Water Quality and Recycled
 Water Supply Feasibility Study

Study Area
 Figure 1-1

Project: Russian River County Sanitation District (SRSD) - Water Quality and Recycled Water Supply Feasibility Study - 05/20/2023

Two related efforts were also referenced in defining the Study Area:

- Sonoma County’s recently completed Geographic Information Systems (GIS) analysis that identifies groupings of unsewered “community clusters” of interest.
- The Monte Rio/Villa Grande area was defined under the Monte Rio/Villa Grande Wastewater Solutions Project, which evaluates strategies for management of wastewater from a currently unsewered area southwest of the RRCSD service area. Findings and information from the *Feasibility and Preliminary Design Report* for that project (Monte Rio Study Report)⁵ are incorporated into this Feasibility Study.

1.4 REPORT OVERVIEW

This Feasibility Study Report is organized into nine chapters as follows:

- **Chapter 1. Introduction**
- **Chapter 2. Service Area and Wastewater Characteristics:** This chapter documents the wastewater systems of the four West County agencies of interest, including: influent and effluent characteristics, regulatory requirements, treatment facilities layouts and capacities, and recycled water operations. Opportunities and constraints related to potential regionalization strategies are also identified.
- **Chapter 3. Alternatives Screening:** This chapter presents a screening evaluation of eight conceptual regionalization alternatives that were developed to serve the four West County agencies of interest. The alternatives evaluated include strategies that involve developing local regional treatment facilities and strategies that involve export of wastewater to the Town of Windsor (Windsor) Wastewater Treatment Plant (WWTP) or the City of Santa Rosa (Santa Rosa) Laguna WWTP. Baseline infrastructure needs and capital costs were defined for each regional alternative, and a qualitative screening analysis was used to define the five feasible alternatives (from a technical, infrastructure cost, and qualitative ranking perspective).
- **Chapter 4. Feasible Alternatives Analysis:** This chapter presents a quantitative cost-benefit evaluation of the five feasible alternatives established in Chapter 3. This additional evaluation included refining of the infrastructure needs, preparing site layouts, and development of a 20-year lifecycle costs analysis. The lifecycle costs were then combined with qualitative screening criteria to identify feasible strategies.
- **Chapter 5. Unsewered Areas Characterization:** This chapter presents the characterization of unsewered parcels within the Study Area that was used to define the clusters of parcels (community clusters) that were selected for inclusion in the Feasibility Study. Twelve community clusters were selected, based on a high-level ranking analysis, including the previously studied Monte Rio/Villa Grande area.

⁵ Brelje & Race Consulting Engineers, 2026. *Monte Rio and Villa Grande Wastewater Solutions. Feasibility and Preliminary Design Report*. Prepared for Sonoma Water. January 2026.

- **Chapter 6. Recycled Water Opportunities and Constraints:** The Regional Water Board’s *Water Quality Control Plan for the North Coast Region* (Basin Plan) prohibits point source waste discharges to the Russian River and its tributaries during the period of May 15 through September 30. Therefore, recycled water use within the West County area will need to increase if currently unsewered parcels are incorporated into a regional wastewater treatment strategy. Chapter 6 documents an assessment of potential recycled water market opportunities and constraints within the West County area.
- **Chapter 7. Climate Change Resiliency:** This chapter documents the flooding-related climate change risks to existing wastewater treatment infrastructure within the Study Area. Possible flood-related impacts for both existing conditions and potential climate change scenarios were identified for the four wastewater treatment facilities and the existing OWTs. This chapter also documents the potential water supply-related benefits associated with regionalization. Possible water supply impacts under future climate change scenarios are described.
- **Chapter 8. Potential Unsewered Community Solutions:** This chapter documents the infrastructure needs and 20-year lifecycle costs for expanding the five feasible alternatives addressed in Chapters 3 and 4 to also include the wastewater generated from the twelve unsewered community clusters selected in Chapter 5. The objective of this analysis was to identify strategies that could be further investigated following completion of this Feasibility Study.
- **Chapter 9. Conclusions and Recommendations:** This chapter provides a summary of the major findings and recommendations identified through the development of this Feasibility Study.