A Roadmap to Restrooms:
Benefits and Barriers for Persons Experiencing Homelessness

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In 2020, the WATERS Collaborative sought to identify potential barriers to providing public restrooms in order to maintain access to basic sanitation. The Collaborative was led by Dr. Claudia Luke (Director, Center for Environmental Inquiry at Sonoma State University), Andy Rodgers (Executive Director, Russian River Watershed Association), Michael Thompson (Assistant General Manager, Sonoma Water), Sean McNeil (Deputy Director Environmental Services, City of Santa Rosa) and Dr. Judith Ford (Sustainability & Resilience Fellow at Center for Environmental Inquiry at Sonoma State University). In order to provide research and recommendations on this pressing issue, they assembled a cross-disciplinary committee of Sonoma County's local leaders with diverse backgrounds in academic and environmental research, water quality management, and homelessness services to work together on the Rising Waters Initiative **(Exhibit 1)**. On a rainy evening in February 2021, the committee met online to discuss the organization's focus for the coming year. Poised at the nexus of water quality concerns and compassion for community members experiencing homelessness, Rising Waters' commitment to address this complex challenge had the potential to immediately affect the lives of approximately 1,702 unsheltered individuals residing in Sonoma County, as well as the County's population and environmental resources as a whole.[1] At the conclusion of the evening's discussion, Rodgers reminded the group of the weight of the challenge before them, stating "these stories are not about other people - they are about us." [2]

WATERS Collaborative & Rising Waters Initiative

The Watershed Academics To Enhance Regional Sustainability (*WATERS)* Collaborative was established by Sonoma Water and the Sonoma State University Center for Environmental Inquiry as a proposed three-year grant in August 2012.[3] The mission of the *WATERS* Collaborative was to enhance watershed management while furthering the academic training of multidisciplinary students. It was renewed by the Sonoma County Board of Supervisors with funding from the Sonoma County Water Agency until December 2022, at which time the board will determine if it will be extended further.[4]

The *WATERS* Collaborative made it possible for students to get hands-on learning experience alongside faculty, community members, and various organizations to solve water and watershed

management challenges faced in Northern California.[5] Rising Waters has utilized local sources to further expand their areas of study such as with Copeland Creek, a creek that runs through Sonoma State University and empties into the Laguna de Santa Rosa, "the largest freshwater wetland in Northern California and a Wetland of International Significance."[6] Some of the collaborative's accomplishments from 2019 included:

- Copeland Creek Restoration Project (multi-year project)— established four new planting zones which they planted with natives and continued their voluntary efforts to remove invasive species.
- TroutLab— created to monitor water quality in tanks used by Trout Unlimited.
- Water Quality Projects— including studies on the effects of wastewater treatments on antibiotics, exploration of remote sensing for water quality, and increases in densities of the fecal indicator E. coli in Copeland Creek following a rain event.[7]

Rising Waters emerged from the *WATERS* Collaborative as a three-year initiative in 2020 and concluding in 2023. The Collaborative expanded by forming additional partnerships with the Russian River Watershed Association and the City of Santa Rosa.[8] Together, they sought to collectively address the intersections of homelessness and watersheds, raise public awareness, and find viable solutions to these complex issues.

The Intersection of Homelessness, Sanitation, and Water Quality Needs in Sonoma County

Homelessness in Sonoma County

As of 2021, homelessness was defined by the federal government as individuals and families:

> "(1) Living in a supervised publicly or privately operated shelter designated to provide temporary living arrangement; or (2) With a primary nighttime residence that is a public or private place not designed for or ordinarily used as a regular sleeping accommodation for human beings, including a car, park, abandoned buildings, bus or train station, airport, or camping ground."[9]

There was no one leading cause as to why homelessness existed. However, there were common patterns as to why it persisted including insufficient incomes, lack of affordable housing, unemployment, poverty, and low wages.[10] The challenge was to make effective changes that reduced obstacles to obtaining permanent housing in order to decrease and eventually end homelessness. The US Department of Housing & Urban Development (HUD) required a Point-in-Time (PIT) Count which measured— "the prevalence of homelessness in each community and collects information on individuals and families residing in emergency shelters and transitional housing, as well as on people sleeping on the streets in cars, abandoned properties, or other places not meant for human habitation."[11] As of 2021, PIT Counts were the only source that

provided nationwide data on persons experiencing homelessness in sheltered and unsheltered areas.

California had the highest homeless population of any state, with approximately 161,548 individuals experiencing homelessness in 2020 as seen in **Exhibit 2**.[12] As of 2020, Sonoma County as a whole accounted for a total population of 2,745 individuals experiencing homelessness, with 1,524 in the jurisdiction of the City of Santa Rosa alone.[13] Since 2015, a series of volunteers, guides, city and county staff, and law enforcement "fan out across the County of Sonoma as a part of an annual effort to understand the needs, number, and circumstances of persons experiencing homelessness."[14] When surveyed, respondents listed the primary causes of homelessness as losing their jobs, succumbing to alcohol and/or drug use, arguments/domestic violence, and divorce/separation.

From 2011 to 2015, Sonoma County showed a decline of people experiencing homelessness from 4,539 individuals in 2011 to 3,107 in 2015, a significant decrease of 31.5%. From 2016-2020, the number of people experiencing homelessness remained relatively constant around 2,900 individuals as illustrated in **Exhibit 3**. In 2020, 38% of individuals experiencing homelessness were sheltered and 62% remained unsheltered.[15] That year, California had a total population of 40 million people, with approximately 161,548, or 0.4% of the state's total population, experiencing homelessness. Despite its progress, 2,745, or 0.5% of Sonoma County's population, was experiencing homelessness in 2020, a figure relatively higher than the state average by 0.1%. In 2019-2020, Sonoma County was among the top ten counties in California with the highest population of people experiencing homelessness. A graph comparing the percentage of Sonoma County's population experiencing homelessness relative to these other counties can be seen in **Exhibit 4**.

Despite the relatively constant numbers from 2016-2020, a common perception among the general population was that homelessness had increased locally given the high percentage of unsheltered individuals. During this time, larger encampments formed in highly visible and populated locations throughout Santa Rosa. The situation was acknowledged as a crisis in August of 2016, when the Santa Rosa City Council formally declared a local homelessness emergency. The declaration provided the City with greater flexibility to allocate resources and catalyze action. It included a set of guidelines for providing various short-term services to address the immediate needs of unsheltered individuals, including "safe parking, safe camping, provision of temporary indoor overnight shelter, the placement and maintenance of portable toilets and access to existing bathroom facilities, and storage for personal belongings."[16] Some residents argued that providing individuals experiencing homelessness with any sort of government assistance such as toilet implementations, sanitation, or housing assistance, would create an "attractive nuisance" that would only contribute to a higher population of individuals experiencing homelessness moving into Sonoma County. However, available census data suggested that most people experiencing homelessness locally were from Sonoma County.

During a Rohnert City Council Meeting in February 2021, Jenna Garcia, Housing Administrator for the City of Rohnert Park, explained how "most people experiencing homelessness in Sonoma County are from Sonoma County, and according to the annual homeless count, 88% reported that their last residence prior to becoming homeless was in Sonoma County, and 64% reported having lived in Sonoma County over ten years."[17]

The Housing First Model

The "Housing First" model was an evidence-based approach to tackling homelessness which prioritized providing stable housing to individuals as quickly as possible, without requiring them to participate in services or modify their behavior as a condition of housing. In 2016, California adopted Senate Bill 1380 to become a "Housing First" state, and Sonoma County's Continuum of Care and the City of Santa Rosa aligned their housing efforts within this framework.[18] The goal of "Housing First" was to reach a "Functional Zero" level of homelessness, which meant "the supply of housing and services" was "equal to or greater than the demand of individuals experiencing homelessness."[19] Due to limited resources, funding source restrictions, and political barriers, it was often difficult to implement effective short-term solutions to meet the immediate needs of unsheltered individuals, such as sanitation services, while balancing the long-term objective to provide housing. From 2015-2020, the population of individuals experiencing homelessness in Sonoma County had remained relatively stable, and local homelessness services managers suggested that there was a "revolving door" of homelessness, meaning that as soon as they had successfully sheltered one unsheltered individual, another individual became displaced and took his/her place.[20] In March 2021, Ludmilla Bade, a Community Representative with Lived Experience serving on the Sonoma County Continuum of Care (CoC) Board, stated that "It is kind of troubling to me that intermediate measures aren't given enough weight. To me, providing bathrooms to people on the street is more than just a comfort item."[21] At the same meeting, Maria Barakat, a volunteer with Sonoma County Acts of Kindness and Commissioner on the Sonoma County Commission on Human Rights made a public comment that:

> "...from the ground, what we really are seeing is this utter lack of interim supportive processes and provisions for people...We have a ton of suffering and we need porta-potties and handwashing stations...Someone mentioned that comfort and survival is not measured around HUD success values, as much as housing placement is valued by HUD for funding, I just want to say, comfort and survival *before* housing, especially in a county where housing is not available for the vast majority of houseless. We need to have much better comprehensive supports for people to provide dignity and comfort beyond survival."[22]

City of Santa Rosa Homeless Services Budget

The Santa Rosa City Homeless Services Budget increased an average of 14.57%— from $3.2 million in fiscal year 2019-2020 to $3.6 million in fiscal year 2020-2021.[23] In 2012-2013, the Homeless Services Budget for the City of Santa Rosa was $363,222 (912% *less* than the budget allowance for fiscal year 2021). Annual budgets for the City of Santa Rosa Homeless Services

are illustrated in **Exhibit 5**.[24] Deciding how to effectively apply funds was challenging as homelessness was "a complex social issue with many contributing factors that cannot be easily or quickly solved."[25] While the budget had gradually increased year to year, City staff members expressed in various interviews that there was insufficient funding available to meet long-term housing objectives while simultaneously addressing all short-term emergency needs.[26, 27] Each City-sponsored program was faced with the challenge of prioritizing which services would be offered with funding and staffing available. Focusing on allocating limited funding appropriately to meet short-term and long-term objectives would be critical in taking the steps necessary to reach the ultimate goal of ending homelessness.

Legal Considerations: HEARTH Act and Martin v. City of Boise

As of 2021, federal and state homelessness services funding was governed by the Homeless Emergency Assistance and Rapid Transition Housing (HEARTH) Act, which was passed in 2009. The HEARTH Act helped consolidate HUD's competitive grant programs and increased emphasis on system wide performance.[28] To qualify for HEARTH related funding opportunities, states, counties, cities and CoC programs had to align their strategies to show impact to the HEARTH Act's seven key system performance indicators, which were: decreasing the length of homeless episodes, increasing placements in safe housing for those living outside, increasing placements in permanent housing for all homeless persons, reducing the percentage of people placed in permanent housing who return to homelessness, decreasing the number of people experiencing homelessness for the first time, increasing employment opportunities and incomes, and reducing the total number of people experiencing homelessness. [29]

In 2009, several residents of Boise who had previously or were experiencing homelessness filed suit against the city on the basis that laws prohibiting them from sleeping outdoors within city limits amounted to cruel and unusual punishment, violated their rights under the Eighth Amendment, and criminalized them for carrying out basic bodily functions. Courts continually sided with the plaintiffs, and after nine years of various appeals and litigation, the 9th U.S. Circuit Court of Appeals ultimately ruled in 2018 that the enforcement of ordinances that prohibit sleeping or camping on public property is unconstitutional if there are insufficient alternatives such as available shelter space or designated safe camping sites. The ruling made it difficult for many communities to enforce encampment ordinances, as they had to show adequate shelter space was available prior to issuing citations to those living outside. This was especially challenging in California, which in 2020 had both the country's largest homeless population and the country's lowest rates of shelter. It was estimated that California only had the shelter capacity to house 30% of the state's homeless population at any given time.[30]

Other External Factors

As of 2021, the number of individuals experiencing homelessness in the United States had increased for the fourth year in a row, growing more than 2% in 2020 alone.[31] Additionally, the potential long-lasting effects of the COVID-19 pandemic such as increased joblessness, ending eviction moratoriums, and the state of the overall economy, had the potential to create a surge in homelessness across the United States, and exacerbate issues within Sonoma County further in the coming years.[32] The COVID-19 pandemic, while unprecedented, provided the city with opportunities to better assist people experiencing homelessness who were put at a disproportionate risk given higher rates of chronic health care needs and lack of shelter. The County of Sonoma quickly sought out solutions to assist these individuals and limit the spread by offering emergency shelter, transportation, street outreach, temporary housing, handwashing stations, and portable toilets.

In 2017 and 2019, the Tubbs, Nuns, and Pocket fires burned 112,380 acres across Sonoma County of which included highly populated areas in the City of Santa Rosa.[33] The fires exacerbated the housing market, which at the time already had historically low vacancy levels. The 2020 Sonoma County Homeless Census noted that "of the 9.7% of respondents who cited the fires as their primary cause of homelessness, 89.1% were unsheltered and 10.9% were sheltered."[34] The lack of availability of affordable housing greatly impacted the rate in which individuals were sheltered due to high demands for rebuilding properties that had been lost during the fires and the continuous increase in the cost of construction and materials. The 2020 census report also stated that "while many of these people will recover stable housing of their own, some will not and will be at risk of homelessness," which will result in an increase in the overall population of people experiencing homelessness.[35]

Human Right to Water: Global, National, and Local Conditions

According to the 2020 "State of the World's Sanitation: An Urgent Call to Transform Sanitation for Better Health, Environments, Economies and Societies" report by United Nations Children's Fund (UNICEF) and the World Health Organization (WHO):

> "Sanitation is a human right. Everyone is entitled to sanitation services that provide privacy, ensure dignity and safety, and that are physically accessible and affordable. Sanitation is also a public good, providing benefits across society in improved health as well as economic and social development... poor sanitation affects everyone, and a polluted environment impacts the entire community, whether or not an individual household has a sanitation facility."[36]

The United Nations recognized the need for accessible water and sanitation for all within their global Sustainable Development Goals (SDGs) as Goal 6. It was estimated that over half of the world's population in 2020, or approximately 4.2 billion people, still lacked safe sanitation.[37] Of

those, more than 630 million people lacked access to adequate restroom facilities and practiced open defecation.[38] Target goal 6.2 within the United Nations' SDG 6 was to achieve access to adequate and equitable sanitation and hygiene for all and end open defecation by 2030, with particular focus on the needs of women, girls, and those in vulnerable situations. It was estimated that achieving universal sanitation by 2030 would require an annual investment of at least $105 billion USD.[39]

The United Nations estimated that the United States has universal or near-universal sanitation access (>99%), with less than 28,000 individuals lacking access to at least basic sanitation. As a developed nation, the United States had far greater access to sanitation in 2020 than many other countries tracked by the UN, however studies showed that the national estimates provided by UNICEF and WHO Joint Monitoring Program (JMP) significantly overestimated sanitation access with the urban United States, as they relied on data sources such as the American Housing Survey and the US Environmental Protection Agency's Safe Drinking Water Information System which excluded people experiencing homelessness.[40] When accounting for individuals experiencing homelessness using data from the American Community Survey (ACS) and HUD's Point-in-Time (PIT) count, researchers estimated that closer to 630,000 people were living in urban areas of the United States without sustained access to a flush toilet, with an additional 300,000 who relied on shared sanitation.[41] As of 2019, no national policy for addressing open defecation existed within the United States, and responsibility for managing public sanitation and health fell primarily on individual cities.[42]

In 2012, California became the first state in the nation to legally recognize the human right to water by adopting Assembly Bill (AB) 685. The right to water afforded by AB-685 included accessible water for sanitary purposes and extended to every Californian, including disadvantaged individuals.[43] In 2019, following the earlier statewide assembly bill and a similar resolution adopted by the State Water Board in 2016, the North Coast Regional Water Quality Control Board signed Resolution No. R1-2019-0024. The resolution adopted "the Human Right to Water as a core value" and directed its "implementation in North Coast Regional Water Board activities," authorizing "the executive officer to enter into a memorandum of mutual understandings with the North Coast Resource Partnership." Among the specific guiding principles of this resolution was the directive for the NCRWQCB to "promote policies that advance the human right to water including the right to sanitation and hygiene facilities and discourage actions that delay or impede opportunities for communities to secure safe, clean, affordable, and accessible water adequate for human consumption, cooking, and sanitary purposes."[44]

In 2020 within Sonoma County, there were an estimated 1,702 individuals experiencing homelessness who were unsheltered and lacked reliable access to sanitation, which resulted in individuals resorting to open defecation. Since the United Nations defined basic sanitation

specifically as the "use of improved facilities that are not shared with other households," one could also include the 1,043 individuals experiencing homelessness housed in emergency or congregate shelters relying on shared facilities in that figure, for an estimated total of 2,745 individuals without access to basic sanitation within Sonoma County in 2020.[45] While permanent housing was the only long-term solution for addressing lack of basic sanitation in Sonoma County, providing restroom facilities when and where they were needed in the short term would not only improve water quality, public health, and sanitation, but have an immediate positive impact to human lives, as "OD, borne out of necessity, robs unsheltered people of their self-worth and is inhumane." [46]

While there were many challenges faced by persons experiencing homelessness, lack of access to sanitation had been historically underrepresented within the United States. Until the human right to water had been fully realized for all, risks of pathogen pollution in our waterways and infectious disease transmission remained. Outbreaks of infectious disease associated with open defecation, poor sanitation among people experiencing homelessness, and over-use of limited facilities available posed significant risks to public health.[47] Each year in the United States, microbial contaminants in recreational waters, primarily from human or other animal feces, accounted for approximately 90 million illnesses and resulted in $2.2 to $3.7 billion in medical bills.[48] From 2016-2018, California faced a significant outbreak of Hepatitis A in several major cities which was attributed to a lack of handwashing and restroom facilities for persons experiencing homelessness.[49] A 2017 audit in the Skid Row area of Los Angeles, found that 1,777 people experiencing homelessness relied on nine public restrooms, falling eighty toilets short of the UN sanitation standards.[50] Limited access to restrooms, clean showers, and handwashing facilities also contributed to persistent negative perceptions of individuals experiencing homelessness, and represented a substantial human development goal warranting additional attention like alleviating related issues of hunger and poverty.

Fecal Contamination within the Russian River Watershed

As of 2021, the Russian River Watershed included nearly 1500 square miles of diverse landscape, approximately 360,000 people, and 238 streams and creeks within Sonoma County.[51] The Russian River Watershed Association was formed in 2003 between eleven cities, counties, and special districts in order to "facilitate partnerships across political boundaries that promote stewardship of the Russian River watershed resources." Historically, the Russian River had issues with several different impairments such as sediment and temperature, as well as pathogens, mercury, phosphorus, and dissolved oxygen. To target pathogen contamination and generate a plan for mitigation, Regional Water Board staff conducted studies of fecal indicator bacteria found in the surface waters of the Russian River Watershed. The studies indicated a widespread bacteria problem and other evidence of fecal waste discharge.

Fecal contamination not only affected the health of the Russian River ecosystem, but posed a significant public health risk to visitors, and led to several beach closures.[52] In alignment with the EPA's Clean Water Act, Section 303(d), which assisted regions in listing impaired waters and developing maximum pollutant guidelines known as Total Maximum Daily Loads (TMDLs), an action plan was developed to address potential sources of fecal pollution in the Russian River area.[53] The Action Plan for the Russian River Watershed Pathogen Total Maximum Daily Load included four key objectives to (1) improve bacteriological quality of surface waters, (2) set limits on the amount of fecal waste discharge, (3) describe potential implementation programs to control fecal waste discharge where controllable, and (4) to describe monitoring activities to ensure implementations attained desired water quality results and preserve beneficial use of the watershed. Numerical targets developed for E.coli bacteria and Enterococci bacteria within the Russian River were in alignment with statewide bacteria objectives and expressed as six-week geometric means (GM) calculated weekly, or statistical threshold values (STV) not to be exceeded more than 10% of the time, calculated monthly. Identified "controllable" sources of fecal waste contamination concern to the Russian River watershed included "direct disposal (or indirect disposal via stormwater runoff) of human or domestic animal fecal waste into the Russian River and its tributaries."[54] It was noted that homeless encampments were one potential source of untreated human waste discharged within riparian corridors, as these areas most often did not have restroom facilities.

Data specifically associating homeless encampments or illegal camping sites with fecal bacteria contamination was limited. Due to these limitations, the Russian River Watershed's Pathogen TMDL did not attempt to assess the potential correlation in their source analysis. However, Regional Water Board staff concluded that homeless encampments are a likely potential source of fecal indicator bacteria in surface waters, based on anecdotal reports of improper waste disposal by encampment occupants, and water quality monitoring which regularly found high levels of fecal indicator bacteria in Santa Rosa Creek downstream from known homeless encampment areas. Anecdotal evidence suggesting the relationship between waste entering the watershed and encampments, as well as limitations and gaps within current data collection and testing capabilities, were also reiterated throughout several personal interviews conducted by the authors.[55,56] More precise methods for identifying contamination point sources were available, such as microbial source tracking (MST), which was a tool for identifying particular fecal pollution sources within the environment using the known associations of certain microbial organisms with their hosts. Microbial community analysis, which could develop a fingerprint of microbial organisms unique to a specific point source, was being researched in 2021 as an even more precise method of sampling, but was still a ways off from being widely used.[57] In multiple interviews conducted by the authors, it was indicated that MST was still not frequently used as the tests were expensive to perform and often simple visual proxies such as trash, waste, and encampments were relied on as general indicators of a water contamination sources to supplement other water quality measurements that were limited in frequency and resolution. It

was suggested that it may be beneficial to conduct more detailed water quality sampling tests upstream and downstream of encampments, or before and after sampling following a pilot restroom implementation or period of restroom closure, in order to strengthen the evidence for the need and effectiveness of restroom placements. [58, 59, 60]

One potential structural control identified in the Pathogen TMDL was to "provide and/or upgrade permanent or temporary restroom facilities at recreation beaches and at locations frequented by homeless and transient people."[61] However, implementing potential structural controls to mitigate the impacts to water quality associated with homelessness across the Russian River Watershed was a complex issue requiring strategic collaboration of multiple water quality agencies, counties, municipalities, public and private organizations working together with the long-term goal of ending homelessness. As such, the County of Sonoma and the Sonoma County Community Development Commission entered into a MOU with the Regional Water Board which outlined a Joint Protocol including information sharing, technical assistance, and quarterly meetings to discuss activities addressing homeless issues in the Russian River area.

Potential Benefits and Barriers to Alternate Restroom Implementations

In this case study, we closely examined several alternative restroom implementation strategies, with particular focus on specific methods used previously within the City of Santa Rosa:

- Portable Toilets (Porta-Potties, Chemical Toilets)
- Mobile Shower/Restroom Trailers
- Permanent Installation (Portland Loo)
- Expanded Hours at Existing Public Facilities
- Doing Nothing

Portable Toilets (Porta-Potties, Chemical Toilets)

Portable toilets, also known as Porta-Potties or Chemical Toilets, are temporary installations that are self-contained and easily transported location to location. They are used to collect human excreta, and chemicals are used to minimize odors until they are emptied. Units can be cleaned and emptied on location, first pumped onto a truck and then emptied into a sewer system or directly into a treatment facility. Portable toilets offer convenience as they are able to be transported relatively easily to any location where they can be unloaded and serviced by a truck. Portable toilets are an affordable option for providing restrooms. In the Bay Area, the average rental rate of one restroom is $100 per unit per month with standard weekly servicing, $60-100 each additional cleaning requested, and up to a few hundred dollars for pickup/delivery fees depending on the site.[62] Portable toilets are constructed out of a lightweight molded plastic and are typically rented as a means to provide temporary solutions in which a toilet need is required or essential for a short period of time. Due to their lightweight and plastic construction, portable

toilets are also more susceptible to being tipped, spilled, or otherwise vandalized versus mobile restroom/shower trailers or permanent restrooms. Key features of portable toilets include lockable doors, ventilation near the top of the unit, seated toilets, and hand washing stations including paper towels, soap, and sanitizer. Standard size portable toilets are compact, averaging between 44-47 inches wide, however wheelchair accessible/ADA compliant units are also available that average 60-70 inches wide. Both the standard or ADA complaint models typically hold up to 70 gallons of waste. An example of standard size and ADA compliant models can be seen in **Exhibit 6**. The relatively smaller size of portable toilets could potentially discourage some individuals experiencing homelessness from utilizing these facilities, as they lack space to secure belongings. It has been observed that unsheltered individuals are often hesitant to be separated from their belongings for even very short periods of time due to fears of theft.[63]

In November 2019, the County of Sonoma approved the placement of eight portable toilets equipped with handwashing stations along the Joe Rodota Trail in response to an expansive encampment that included over 170 people and 140 tents. The restroom installation received permit approval from Sonoma County Regional Parks after much debate between homeless services advocates and County officials, and following a particularly contentious Board of Supervisors meeting in which activists and officials on both sides called the encampment a "public health crisis." While debate continued on whether or not the County should support sanctioned encampments as a temporary solution while searching for permanent housing opportunities, the provision of these portable toilets was agreed upon to meet the immediate sanitation needs of people experiencing homelessness along the trail, addressing the shared concerns of neighbors, recreational users of the trail, authorities and trail residents about the increasing presence of untreated human waste. The portable restrooms were proposed by a group affiliated with Homeless Action, and paid for by Sonoma Applied Village Services (SAVS) with the support of fundraising efforts.[64]

During the COVID-19 pandemic in 2020-2021, cities worked together with Sonoma County Emergency Operation efforts to tap into $150 million in emergency statewide funding that was made available to help protect individuals experiencing homelessness in California.[65] One initiative that was prioritized by the County was the placement of portable toilets and hand washing stations at or near known encampment areas to provide sanitation and help prevent the spread of the virus. In total, the County provided 38 portable toilets and 52 handwashing stations across Sonoma County. The majority of these placements were located within the City of Santa Rosa, which received a total of 18 toilets and 33 handwashing stations. A list of Santa Rosa's portable toilet locations can be seen in **Exhibit 7**.[66] In addition to the County's portable toilets and handwashing stations, the City of Santa Rosa also coordinated to place debris containers near these encampments. The County first began working with cities in March of 2020 to identify these locations, and quickly received approval from Emergency Management. The public health pressure of COVID-19 helped to hasten the process, and the portable toilets were

installed by April of 2020. Michael Gause, Sonoma County's Ending Homelessness Program Manager, noted that public support for portable restroom provisions seemed greater during the pandemic, likely due to the fact that people no longer had access to restrooms in stores or other public buildings. As of April of 2021, approximately 10-12 units were still in operation, with projected removal by end of the summer. The cost of the portable toilet placements varied, but at the program's peak with over 30 units around the county, monthly costs were estimated around $150,000.[67]

Mobile Shower/Restroom Trailers

An alternative implementation to portable toilets are Mobile Shower Trailers. They are portable trailers that include all of the services portable toilets do, with the added benefit of private shower facilities. When considering purchasing a shower trailer, Mobile Shower Trailers offer many advantages that are customizable to suit the needs of the consumer. Depending on the mobile unit, a portable shower trailer can accommodate anywhere from one to multiple shower facilities per trailer. They offer comfort for users, as they are treated with a private shower and private dressing space without the fear of their belongings being stolen or their privacy being invaded. Security and privacy is a key consideration, as it has been found that "in the United States, where public toilets are often not available 24 hours a day, women are put at increased risk for harassment, gender-based violence, and may experience shame when forced to resort to OD...public toilets have value. They provide an opportunity to reduce OD and serve non-homeless urban residents and tourists."[68] Similar to portable toilets, a key advantage of trailers is the ease of transport and flexibility. They can be transported from location to location, wherever there is an immediate need for them.

Mobile shower/restroom trailers were implemented at the Safe Social Distancing Program in the Finley Community Center Parking Lot in May 2020, during the COVID-19 pandemic.[69] The site at the Finley Community Center was "cordoned off with green mesh fencing where inside spaced 12-feet apart, were 68 blue tents, each equipped with sleeping bags and storage bins. A neat row of portable toilets lined one side of the encampment, mobile shower trailers were utilized and was managed by Catholic Charities of Santa Rosa."[70] In May to November 2020, the City of Santa Rosa spent $680,000 to manage the site which at the end of the experiment, charted a new course for how to approach homeless services during a crisis. While the Finley site received initial resistance, upon the conclusion of the experiment, many local community members came to embrace the site, which also received statewide news recognition for its success.[71]

The Homeless Outreach Services Team (HOST), operated by Catholic Charities and funded by the City of Santa Rosa, piloted the Clean Start Program which offered access to mobile bathroom-shower units to people experiencing homelessness. The Clean Start mobile shower trailer cost $87,450 to purchase and measures 16 feet in length, 7 feet wide, and had two bathroom-shower units.[72] As of 2020, the mobile trailer operated three times weekly in three

different locations within the City of Santa Rosa—Bennett Valley Rd, City Hall Parking Lot, and Southwest Community Park. In fiscal year 2015/2016, HOST provided 1,198 showers. In fiscal year 2019/2020, 926 showers were provided, a 115% decrease due to difficulties from the rise of the COVID-19 pandemic. In addition, "HOST's Clean Start Program served as an outreach tool to further HOST's efforts to engage persons experiencing homelessness in our community into services."[73]

For more than fifty years, The Redwood Gospel Mission, a nonprofit organization, transformed the lives of the needy through a variety of homeless services. Mobile Ministries included services that fulfilled a practical need such as search and rescue, nomadic shelters, and mobile showers.[74] The Redwood Gospel mobile shower trailer, which was brought into circulation in 2016, was equipped with two full bathrooms— shower, toilet, handwashing station, and an on-board 125-gallon freshwater tank. As of 2020, it was in operation five days a week between 1.5-2 hours each day and operated in various parts of the county: Guerneville, Cloverdale, Petaluma, and the City of Santa Rosa.[75] Similar to Clean Start mobile shower trailers, Mobile Ministries trailers required city permits, electrical hook-ups, and staffing to set up and operate.

LavaMae is an alternative mobile shower method utilized in Los Angeles, San Francisco and surrounding counties as shown in **Exhibit 8**. It is "a nonprofit that teaches people around the world to bring mobile showers and other services that promote well-being to people experiencing homelessness."[76] In 2014, LavaMae founder Doniece Sandoval, converted a retired public service bus into showers and toilets on wheels that provided easy transportation to wherever the demand was highest. Each bathroom unit featured a shower, toilet, sink, and changing area as seen in **Exhibit 9**. Individuals simply reserve a 15-minute time slot where they will be provided with towels, shampoo, soap, and new socks (all at the cost of LavaMae through in kind donations and funds raised). LavaMae can provide cities with regular services, pop-up care sites, or a complete do-it-yourself toolkit. The toolkit includes information on developing a business plan, permitting and regulatory considerations, vehicle selection, water and waste management, operational guidelines, staffing, budget templates, site selection, metrics tracking and more.[77] Depending on the need of the city, there are alternative vehicle options including RVs, Honey Wagons, or Metro Busses (as was utilized when the program was piloted in 2014). In San Francisco, LavaMae's two busses and trailer run six-days per week, 5.5 hours per day throughout different parts of the city where city permitting, are hooked up to fire hydrants.[78] Other considerations and constraints include scheduling and coordinating with the city to determine which locations have the greatest need, water source hookups (hydrants, spigots), parking permits, DMV fees, and sewer system coordination for wastewater disposal. Capital costs associated with these mobile trailers vary on the vehicle; for example, to convert an old small bus into a functioning bus with two shower stalls and toilets, it costs an estimated $75,000, while purchasing a truck and trailer would cost approximately $95,000. Initial supplies costs were an estimated $1,982 with those products lasting from 1-3 months depending on usage and number of days it is in operation.[79] Ongoing operational costs, including supplies, laundry, water,

propane, and maintenance were estimated at $18,672 per year, plus, staffing the trailers with one manager and three full time employees for a regular daytime/weekday schedule was estimated at $264,566 per year.[80] For a detailed LavaMae trailer budgeting breakdown, see **Exhibit 10.** As of 2019, the nonprofit has surpassed their goal of providing over 75,000 showers to 30,000 individuals experiencing homelessness in California.[81] LavaMae strives to continue expanding their services to communities experiencing need, as Kris Kepler, Senior Director of Programs and Impact stated, "We envision a world where hygiene is treated as a basic human right."[82]

Permanent Installation (Portland Loo)

The Portland Loo was "designed by the city, for the city" and conceived from a need for public restrooms in the city of Portland, Oregon.[83] They are Portland's famous single-occupancy stand-alone permanent public toilet installation available to the public for free and accessible around the clock. In 2008, the first unit was installed and has proven "to be a durable and inexpensive solution to keep your city clean and crime free."[84] As of 2021, there were over 60 installations located in over twenty locations across different parts of the US and parts of Canada. Portland City Commissioner Randy Leonard was inspired to develop The Loo for several reasons - "there was a rise in the city's homeless population...without restroom facilities, this population was left to find somewhere else to take care of business...The Loo would be a viable solution which would help with sanitation, prevent waste throughout the public and tourist areas, as well as the spread of disease."[85]

The Portland Loo is a gender-neutral permanent installation which features a modern sleek design that is easy to recognize. Constructed from durable stainless steel, featuring round steel doors, and a curved cap, The Loo itself offers a variety of customizable features available. Each unit costs $96,000 (shipping costs included) with installation costs varying from city to city, and yearly maintenance costs of approximately $11-12,000 per year.[86] Some key features that make this permanent installation an attractive choice include graffiti-proof coating, no sink inside and a spigot outside (which limits loitering inside the facility), no mirrors, angled louvers for privacy and security, and blue light emission (to prevent drug use inside the facility). It is a clean and simple design that is fully functional year-round, and depending on city needs, can be utilized 24 hours a day.

The Portland Loo can take as little as 90 days to build from order to delivery. Depending on city needs, Loo's can be placed in cities or in rural parks and trailheads without the need of a water or sewer connection with The Portland Loo's off-grid option. The off-grid alternative utilizes a holding tank located below the restroom that supplies flushing water and collects wastewater for up to 1,326 flushes before it needs to be emptied and refilled.[87] Dependent on proper maintenance, these permanent installations can be expected to last upwards of 100 years.

The City of Portland implemented fifteen Loo's throughout the city with the most recent installation in 2018. The general consensus of the installations was positive, receiving comments

such as “great idea,” “beneficial to the homeless population,” “beneficial to everyone,” and “much needed with lack of public restrooms.” However, there were some public concerns raised, such as that they would “attract drug use, prostitution,” “create more problems,” and were “too expensive to purchase and maintain.”[88] One city that experienced issues with the Portland Loo was the City of San Diego. In 2014, San Diego purchased and installed two Loo’s for a total of $560,000, “an amount significantly more than double the initial estimate of $215,000.”[89] Costs increased significantly because the locations chosen were not optimal due to difficulty in connecting to water and sewer lines. Due to increasing costs and public complaints, one of The Loos installed was ultimately removed and placed in storage, at a loss of over $280,000 to the city.[90]

On June 25th, 2019, the Santa Rosa City Council approved a budget of $250,000 to install a permanent 24-hour public restroom in the downtown area of Santa Rosa. Following deliberation at various council meetings, The Portland Loo implementation was approved as shown in **Exhibit 11**. The approval came despite opposition from local business owners represented by the non-profit Downtown Action Organization, who were “100%” opposed to the installation of a public restroom on the square.” The group felt that the Portland Loo was not necessary due to other restrooms in the area, and would increase maintenance costs (included in their taxes) and look unattractive downtown.[91] Seventeen locations were evaluated and considered including the possibility of converting existing restrooms into 24-hour use. On December 17th, 2020, the City Council unanimously voted for the Santa Rosa City Annex as the prime location as it met “key criteria for placement such as, safety and visibility, utility, connectivity and proximity to the downtown core.”[92] The Santa Rosa Portland Loo was received on August 31st, 2020 with estimated completion November 2020; however due the COVID-19 pandemic, public access was “contingent on the Sonoma County public health order.”[93]

Expanded Hours at Existing Public Facilities

Rather than renting, purchasing, or installing new restrooms, another possible alternative implementation is to expand the hours of operation at existing public restroom facilities within public buildings and parks. Of course, this alternative is only possible when the target location is nearby already existing public facilities. While “nearby” is a relative term, one street medicine team has suggested that a quarter-mile or greater walk to a restroom represents a significant challenge and risk to those with medical issues causing bowel urgency or mobility limitations.[94] In their analysis for the Portland Loo implementation, and at the request of the Downtown Subcommittee, City of Santa Rosa staff researched the feasibility of converting four of the City’s downtown public restrooms that were within a quarter-mile of Courthouse Square from daytime only to 24-hour use. For conversion to 24-hour use, two of the restrooms would have required upfront one-time ADA retrofit costs of $50,000 and $200,000 each. On average, it was estimated that the restrooms would incur additional ongoing costs of $111,250/year each for maintenance and security to cover the expanded hours.[95] As public restrooms are typically located within city

buildings or parks that are otherwise closed in the evening, providing access for all while ensuring security was a primary concern. Other considerations included whether the existing restrooms were clearly visible from the sidewalk, as most often they were not in plain sight. Ultimately, the City of Santa Rosa decided against expanding hours of operation at these existing public restrooms, and instead chose to install a Portland Loo in Courthouse Square that would be available for use 24/7.

Alternatively, the City of San Diego shifted their efforts to expanding access to existing public facilities. After the City experienced ongoing issues and ultimately chose to remove one of their two Portland Loo installations in 2016, the nearby St. Vincent de Paul shelter stepped in to meet demand by expanding hours for their building's ten public restrooms to 24 hours a day. To safely provide this service, it required that the shelter hire full-time securing attendants. It was estimated that the additional hours and security for the restrooms cost approximately $100,000 a year, which could be covered by the City's savings from no longer maintaining the Portland Loo unit. It was noted that the expanded hours approach would be San Diego's preferred model moving forward.[96]

Doing Nothing

When deciding between alternative options, there always exists the option to continue with the status quo and do nothing. Oftentimes, this occurs as the default when decision makers are unable to come to an agreement, or funding is simply not available for new initiatives. However, doing nothing often carries opportunity costs, environmental impacts, and ethical concerns - all of which are true in the case of providing restrooms to individuals experiencing homelessness. In addition to potential losses of recreational and tourism income due to beach closures, fecal bacteria pollution in local waterways has had significant direct costs to the County for cleanup. Due to ongoing issues with human waste at popular Russian River beaches such as Steelhead and Sunset beaches in Forestville, Public Works has had standing contracts with hazardous materials vendors to clean up fecal matter. Costs reached up to $60,000 per cleanup.[97]

There are also potential legal risks to failing to prevent sewage from entering the watershed. In 2016, the San Jose City Council voted to settle a lawsuit filed by Baykeeper, an environmental non-profit based out of Oakland, for $100 million after Baykeeper had documented sewage and trash pollution in two of San Jose's major waterways. As of April 2021, the cities of Sunnyvale and Mountain View were facing similar litigation from Baykeeper, who claimed the cities were in violation of the Clean Water Act by allowing raw sewage to be discharged into creeks resulting in fecal bacteria pollution levels of more than 50 times the legal allowance.[98]

As noted by UNICEF and WHO, "Achieving universal access to safe sanitation will be expensive, but inaction brings greater costs. Investments in sanitation – particularly safely managed sanitation services – generate positive externalities across society." They also

suggested that the "key to accelerating coverage of sanitation services and to ensuring that all of society reaps the benefits" is strong government leadership.[99]

Strategic Management, Future Opportunities, and Next Steps

> "Collaboration without integration is just another form of fragmentation."
> -Don Schwartz, Assistant City Manager of Rohnert Park[100]

Throughout several local City Council and CoC meetings in early 2021, it was expressed that there were ongoing challenges in Sonoma County due to the extended fragmentation of systems of homelessness management and funding sources. Sonoma County was not alone in this challenge, as many communities nationwide were struggling to overcome leadership gaps, political inertia, and uncertainty to successfully implement new solutions by integrating existing systems of care. American housing and community development leader, Rosanne Haggerty, stated that homelessness was not the problem, but rather the "symptom of this fragmentation, the breakdown, that is so overwhelming to so many communities on so many fronts." She also added that:

> "Organizing people around taking on and really committing to this most visible form of poverty is a way you can actually make your city work better...This is a total last mile problem. And if we grab the picture whole, and have that community level accountability, we find there are many more assets, many more solutions, than communities have imagined."[101]

At the county level, the CoC Board committed to developing a strategic plan in 2021. A strategic plan would more clearly outline all of the available resources and program goals within Sonoma County, and allow local decision makers to collaborate more effectively with a holistic consideration of all available fund sources, such as Federal, State, County, City, private organizations and Measure O tax funds. Stephen Sotomayor, CoC Board Member and Housing Administrator for City of Healdsburg, stressed the importance of developing a strategic plan during a board meeting in March 2021:

> "Right now, we're asking questions without a roadmap in front of us. I think that we need to move forward with getting some measurable goals...That's our number one priority for work, or else we're going to be looking at data all the time...and saying 'well, what actually happened?' instead of saying 'this is what we were trying to have happen.'"[102]

A similar opportunity for strategic integration and collaboration was seen on the watershed side of this complex issue. Russian River Watershed Association Director Rodgers said that "it still seems like we haven't done even the easy work yet...we will always have our political boundaries but if we don't operate using our natural boundaries, we're not going to get things done easily and probably very smartly...I think I do see that changing."[103] In 2008, Rodgers

participated in Sonoma County's last General Plan update. He noted the changes in watershed management were starting to be seen locally when for the first time in Sonoma County, the General Plan included a water element.[104] The new water element offered Sonoma County's strategic planners an additional lens through which the entire Russian River Watershed could be evaluated from Mendocino County into Sonoma County, thus broadening their approach to water resource management beyond strict political boundaries.

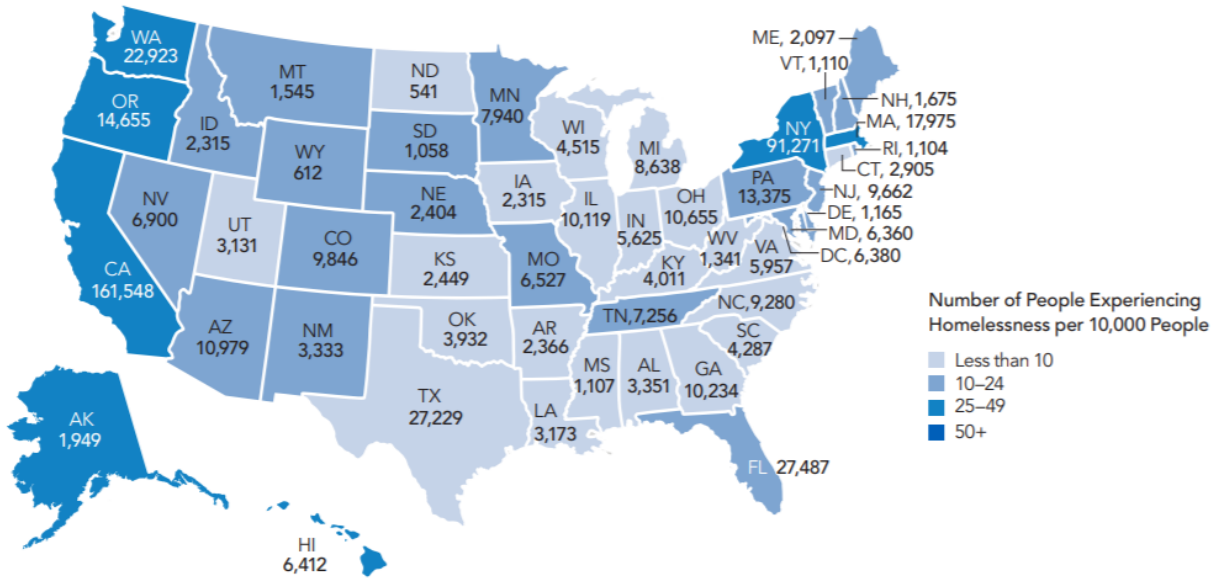
Homelessness management and watershed management shared similar characteristics in the organic nature of their challenges and need for leadership to work integratively across political borders to reach logical solutions. The Rising Waters Committee understood there were many factors to be evaluated and considered when recommending how to effectively implement basic sanitation services for persons experiencing homelessness in Sonoma County. In order to provide effective recommendations, Rising Waters would have to consider whether the implementation would be permanent or temporary, what existing infrastructure was available, what the primary needs were of the demographics being served, legal requirements, maintenance requirements, installation and ongoing costs, and the potential benefits or negative impacts of each placement. Additionally, ongoing factors such as various viral outbreaks that impacted public health, fecal bacteria contamination in the environment and waterways, economic uncertainty, and an increase in homelessness nationally all contributed towards a "crisis" setting that demanded the initiative's urgent attention.

Exhibits

Exhibit 1:

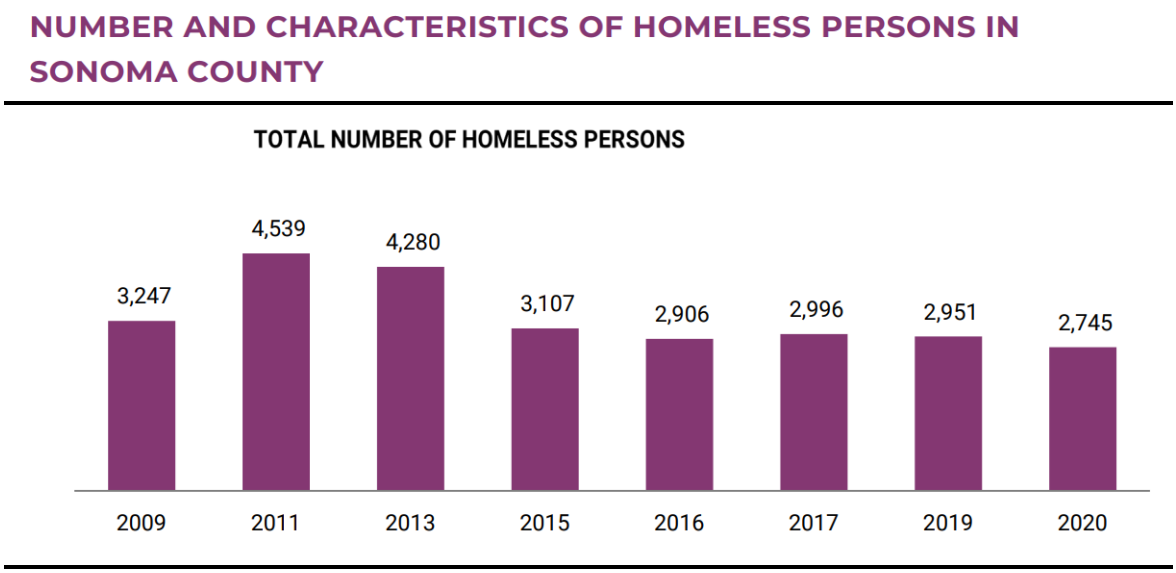
Center for Environmental Inquiry - Spring 2021 Rising Waters Steering Committee		
Name	**Position**	**Organization**
Chris Halle	Project Development	SSU Center for Environmental Inquiry
Kerry Wininger	Outreach & Projects	SSU Center for Environmental Inquiry
Claudia Luke	Director SSU	SSU Center for Environmental Inquiry
Andy Rodgers	Executive Director	Russian River Watershed Association
Jenna Garcia	Housing Administrator	City of Rohnert Park
Lynea Seiberlich-Wheeler	Licensed Clincal Social Worker	West County Health Center
Michael Thompson	Asst. General Manager	Sonoma Water
Sean McNeil	Deputy Director Environmental Services	City of Santa Rosa
Matt St. John	Executive Officer	North Coast Regional Water Quality Control Board
David Sul	Professor, Team 1	SSU, Department of Political Science
Armand Gilinsky	Professor, Team 2	SSU, Department of Business and Economics
Megan Burke	Professor, Team 3	SSU, Department of Philosophy
Phil Gedalanga	Professor	CSU Fullerton, Department of Health Sciences
Nadine Magallanes	Student, Team 1	SSU
Jamie Thompson	Student, Team 1	SSU
Matt Roehm	Student, Team 1	SSU
Samantha Stevens	Student, Team 1	SSU
Lauren Hart	Student, Team 2	SSU
Itze Peña-Andrade	Student, Team 2	SSU
Camile Babida	Student, Team 3	SSU
Deborah Barrera	Student, Team 3	SSU
Morgan Monae Beatty	Student, Team 3	SSU
Lauren Williams	Student, Team 3	SSU

Exhibit 2:
Estimates of Persons Experiencing Homelessness, By State 2020



Source: 2020 AHAR: Part 1 - PIT Estimates of Homelessness in the U.S.

Exhibit 3:



Source: Jaross, M., Kwak, Y., & Gallant, J. 2020. "Sonoma County Homeless Census and Survey Comprehensive Report 2020." Applied Survey Research.

Exhibit 4:

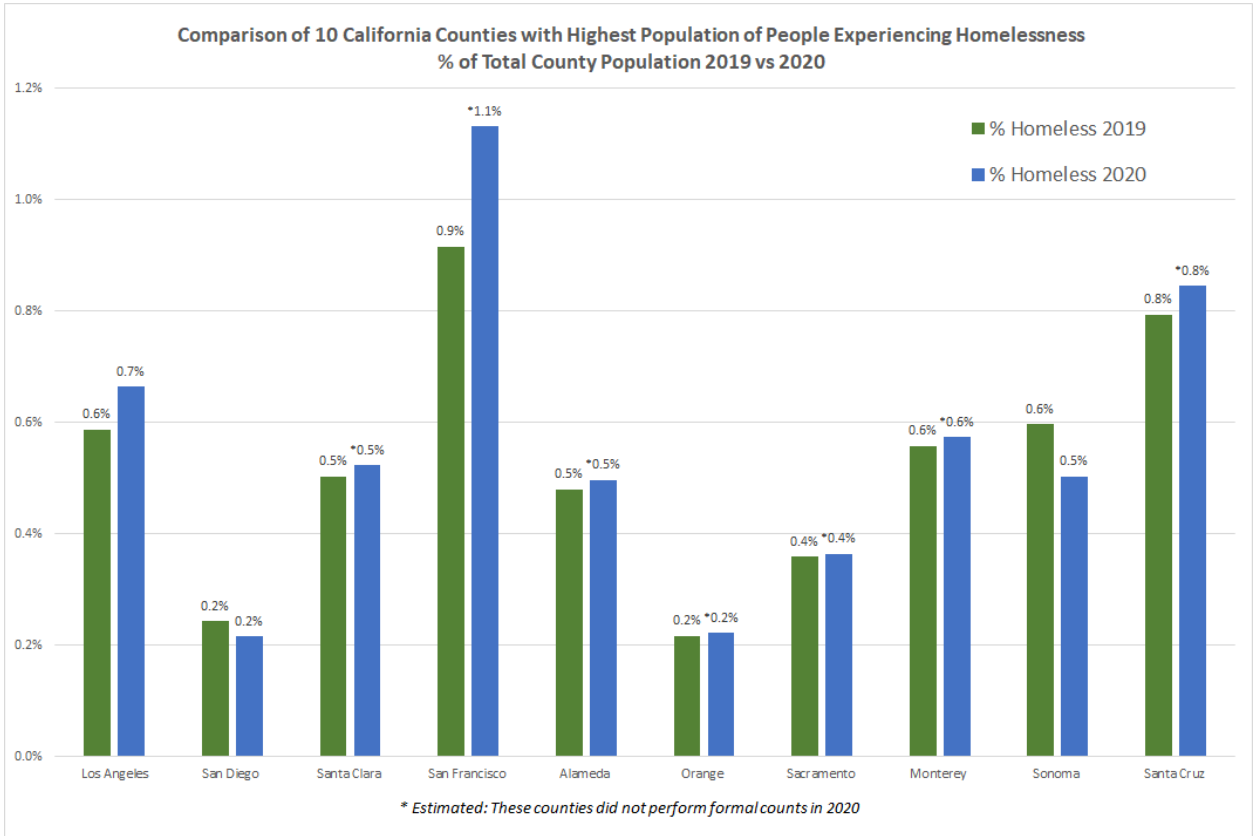


Exhibit 5:

City of Santa Rosa Homeless Services Budget 2012-2021			
Fiscal Year	**Program Budget**	**Actual Spent**	**Variance**
FY 2012-2013	$363,222	$522,410	$159,188
FY 2013-2014	$508,599	$600,499	$91,900
FY 2014-2015	$701,197	*not found*	*n/a*
FY 2015-2016	$1,161,041	*not found*	*n/a*
FY 2016-2017	$1,667,991	$1,527,965	-$140,026
FY 2017-2018	$1,596,347	$2,507,033	-$910,686
FY 2018-2019	$3,208,100	$3,065,832	$142,268
FY 2019-2020	$3,208,100	*n/a*	*n/a*
FY 2020-2021	$3,675,631	*n/a*	*n/a*
% Budget Increase 2012 - 2021	911.95%		

Note: Actual expenses for FY 14-15 and FY15-16 were not found. Actual expenses for FY 19-20 through FY 21-22 were not yet available at the time this report was completed.

Exhibit 6: Portable Toilets

Portable toilets placed at Santa Rosa Veterans Memorial Building during the COVID-19 pandemic, May 2021. Left: a standard sized portable toilet unit, Right: an ADA compliant unit and handwashing station. Photos by Lauren Hart.

Exhibit 7: County of Sonoma COVID-19 Portable Toilet Placements within Santa Rosa

2020 Portable Toilet Stations for the City of Santa Rosa		
Location	**Address**	**# of Toilets**
City Hall Campus	100 Santa Rosa Ave.	2
Prince Memorial Greenway	Orange St. @ Laurel St. near Olive Park	1
Prince Memorial Greenway	Sonoma Ave. @ South A St. near Luther Burbank Elementary	1
Corporate Center Parkway Area	Capricorn Way @ Apollo Way	1
Corporate Center Parkway Area	Challenger Way @ Capricorn Way	1
Corporate Center Parkway Area	Mercury Way @ Apollo Way	1
College Ave Underpass	South side of Underpass	1
Homeless Services Center	600 Morgan St.	2
Fremont Park	Corner of 5th and Hope St. - in parking spot	1
Bennett Valley Senior Center	704 Bennett Valley Rd.	1
Near 9th St. @ Dutton Ave	S/E Corner (city property)	1
South A St. @ Earle St.	Dead end @ 101 Pedestrian Bridge	1
Brookwood Health Center	983 Sonoma Ave.	1
City Right-of Way	West Steele/Guerneville Rd.	1
Santa Rosa Vets Building	1351 Maple St.	2
Total # of Toilets		**18**

Exhibit 8: LavaMae Bus

Exterior of LavaMae Bus, December 2015. Courtesy of photographer Henrik Kam, San Francisco USA.

Exhibit 9: LavaMae Interior

Interior of LavaMae "hygiene pod," December 2015. Courtesy of photographer Henrik Kam, San Francisco USA.

Exhibit 10:

LavaMae Budgeting Estimates

Initial Setup Costs			
Truck		$35,000	
Trailer		$60,000	
Vehicle Wrap (trailer and truck)		$4,800	
Trailer DMV Fees (Varies by state)		$500	
Generator		$2,000	
	Total:	**$102,300**	
Initial Supplies Cost	**Total:**	**$1,982**	
Ongoing Operational Costs (cleaning supplies, laundry, water, propane)	**Total:**	**$12,672**	**per year each trailer**
Ongoing Trailer Service & Maintenance	**Total:**	**$6,000**	**per year each trailer**
Ongoing Labor Costs			
1 shift:			
1 manager, 3 employees (full-time)	**Total:**	**$264,566**	**per year**
3 shifts for 24/7 coverage:			
3 managers, 9 employees (full-time)	**Total:**	**$831,714**	**per year**

Exhibit 11: Santa Rosa Portland Loo Installation

Exterior of Portland Loo 24-hour Permanent Installation located outside the City Hall Annex at 90 Santa Rosa Ave., March 2021. Photo by Itze Peña-Andrade.

A Roadmap to Restrooms:
Benefits and Barriers for Persons Experiencing Homelessness

Instructor's Manual

Case Synopsis

This case study examines Rising Waters, a three-year research initiative emerging from Watershed to Enhance Regional Sustainability (WATERS) Collaborative at Sonoma State University's Center for Environmental Inquiry in Rohnert Park, California. The WATERS Collaborative engages people from different disciplines to find solutions to water challenges being faced in Northern California. With funding from the Sonoma County Water Agency, as approved by the Sonoma County Board of Supervisors, Rising Waters set out to research the intersections of homelessness and watersheds in Sonoma County to raise public awareness and identify viable solutions to these challenges. With thousands of people living on the streets of Sonoma County, California, homelessness reached a tipping point in 2016, when Sonoma County declared a local emergency to address the crisis affecting the lives of these unsheltered individuals. In 2021, the initiative specifically focused their efforts on identifying barriers to providing restrooms for persons experiencing homelessness. Strategic restroom implementations would require collaborative effort by Rising Waters, Sonoma County Water Agency, and the

City of Santa Rosa to overcome obstacles such as neighborhood opposition, concerns from local business owners, limited data sources, funding restrictions, and conflicting priorities. This case explores the benefits and barriers encountered in five public restroom implementation strategies previously implemented in the City of Santa Rosa - Portable Toilets, Mobile Shower/Restroom Trailers, Permanent Installations, Expansion of Hours at Existing Public Facilities, and Doing Nothing (leaving as is).

This case also provides readers with detailed information on the severity of the homelessness crisis affecting Sonoma County in comparison to the total homeless population of California. We include financial data for the City of Santa Rosa's homeless services budget, legal considerations, human right to water, and fecal contamination concerns within the Russian River Watershed to give context to Rising Waters' mission and identify solutions to this pressing challenge.

Intended Courses and Learning Objectives

The content presented within this case study is intended for use in Master of Business Administration or Undergraduate level studies, specifically in courses of study in Strategic Management and/or Governmental and Non-Profit Organizational Development. For Strategic Management courses, this case can be used to encourage discussion around social issues management, crisis management, strategic implementation, sustainability, and social responsibility. Students may benefit from prerequisite knowledge of homelessness, watershed management, budgeting, and sanitation, however it is not required for this case. Through the evaluation of five alternate restroom implementation methods, this case provides specific insight into the logistical, social, political, and legal barriers to providing public restrooms for people experiencing homelessness in order to meet sanitation needs and improve water quality.

Through analyzing and discussing this case, students should be able to:

1. Describe the impact of homelessness within the City of Santa Rosa and the ramifications to Sonoma County's environment as a whole.
2. Evaluate the internal and external factors surrounding water and watershed management challenges faced in Sonoma County in relation to the population of people experiencing homelessness.
3. Generate realistic solutions for Rising Waters Initiative and determine which implementation provides the best solution(s) to aid people experiencing homelessness.

4. Recommend potential strategies to overcome the challenges presented in the case material.

Case Topics

Social Responsibility	Watershed Management
Environmental Responsibility & Sustainability	Homeless Services
Strategic Planning & Alliance	Sanitation
Crisis Management	Ethics

Research Methods

Between February to May of 2021, the authors collaborated with the SSU Center for Environmental Inquiry's Rising Waters Steering Committee in three separate video meetings to discuss potential barriers to providing public restrooms and to further evaluate the intersections of environmental protection, water management, sanitation, and homelessness as experienced within Sonoma County. During the same time frame, the authors also conducted one-on-one video interviews with Sean McNeil (Deputy Director of Environmental Services, City of Santa Rosa), Phil Gedalanga (Professor, CSU Fullerton Department of Health Sciences), Kelli Kuykendall (Housing and Community Services Manager - Homeless Services, City of Santa Rosa), Andy Rodgers (Executive Director, Russian River Watershed Association), and Jenna Garcia (Housing Administrator, City of Rohnert Park). Additional primary data regarding COVID-19 portable toilet placements was collected through direct email communication with Michael Gause (Ending Homelessness Program Manager, Sonoma County Community Development Commission). The authors also attended multiple virtual public meetings during this time, including Rohnert Park City Council, Rohnert Park Homeless Roundtable, Sonoma County Continuum of Care (CoC) Board, North Bay Watershed Association Board meetings. Primary case data was supplemented with secondary research from City of Santa Rosa Council meeting recordings, academic journals, and electronic sources related to homelessness, sanitation, and public restroom implementations. Sonoma County and City of Santa Rosa homeless services budget information was retrieved through public archives and meeting materials found online.

Limitations

The scope of this case study was limited to the evaluation of five public restroom implementation strategies. In order to provide relevant data within a local context, our study focused on methods which had previously been considered or implemented within the City of Santa Rosa, with supplemental information from similar implementations elsewhere in

California. While this study focused on sanitation for unsheltered individuals, it did not address the full range of homelessness services necessary to provide complete care and housing. Due to the ongoing COVID-19 pandemic at the time this study was conducted, the Sonoma County Homeless Survey was postponed in 2021, and data was limited to 2020 figures. The authors were not able to conduct direct field interviews with persons experiencing homelessness in Sonoma County, the perspectives of which would benefit future studies. Limitations in the frequency, type, and specificity of water quality data available made it difficult to attribute fecal contamination in local waterways directly to encampments. However, anecdotal observations heard through interviews conducted by the authors suggested that further research into the connectivity and severity of these issues is warranted, and could help to identify specific locations for strategic implementation of public restrooms that maximize sanitation, beneficial use, and reduction of pathogens entering in our watershed.

Teaching Plan and Basic Pedagogy

To provide enough context and background information to understand the information presented throughout the case, instructors and students may benefit from prerequisite knowledge of homelessness, watershed management, governmental/non-profit management, and sanitation, however it is not required for this case. The readings listed below will provide a deeper understanding of strategic management and the complex issues surrounding homelessness—emergency assistance, sanitation, water quality, legal barriers and funding mechanisms in order to help readers identify strategic restroom implementations that best address these intersecting challenges. The following readings are recommended:

1. Wheelen, T. L., Hunger, J. D. Hoffmann, A. N., and Bamford, C. E. (2015). *Concepts in Strategic Management and Business Policy, 14/e*. Upper Saddle River, NJ: Pearson.
2. De Jong, I. (2019). *The Book on Ending Homelessness.* FriesenPress.
3. Jaross, M., Kwak, Y., & Gallant, J. 2020. “Sonoma County Homeless Census and Survey Comprehensive Report 2020.” Applied Survey Research.
4. Frye, Elizabeth A., Capone, D., Evans D., & Verbyla, M. (2019, October 15). Open Defecation in the United States: Perspectives from the Streets. Retrieved March 29, 2021, from https://www.liebertpub.com/doi/10.1089/env.2018.0030
5. Clean water Act Section 303(d): Impaired Waters and Total Maximum Daily Loads (TMDLs). (2020, March 24). Retrieved March 07, 2021, from https://www.epa.gov/tmdl
6. City of San Rafael. Martin v. Boise. (2020, January 28). Retrieved April 17, 2021, from https://www.cityofsanrafael.org/martin-v-boise/
7. Homeless Emergency Assistance and Rapid Transition to Housing Act. (n.d.). Retrieved April 17, 2021, from https://www.hudexchange.info/homelessness-assistance/hearth-act/#:~: text= The%20Homeless%20Emergency%20Assistance%20and,of%20HUD%27s%20 competitive%20grant%20programs

Discussion Questions

1. Describe Rising Water's mission. How might the collaborative use their position to generate actionable research outcomes that could align local leaders in addressing sanitation for individuals experiencing homelessness in Sonoma County?
2. Using the PESTEL analysis framework, summarize the intersections of homelessness, water quality, and sanitation. What is the scale of homelessness within Sonoma County compared to elsewhere?
3. Generate strategies that local leadership might use to reduce legal, social, and political barriers to providing restrooms for persons experiencing homelessness. Do any strengths, weaknesses, opportunities, or threats have the potential to play a role in how the local agencies included in this study might collectively address this issue?
4. Evaluate given financial data available for the various implementations and conduct an analysis comparing the costs of each.
5. Given the alternatives described in the case, what are pros and cons of each option? Are there other alternatives not suggested in the case? What option for providing restrooms should Rising Waters recommend to local leadership?

Analysis and Responses to Discussion Questions

1. *Describe Rising Water's mission. How might the collaborative use their position to generate actionable research outcomes that could align local leaders in addressing sanitation for individuals experiencing homelessness in Sonoma County?*

   Rising Waters is a three-year initiative, 2020-2023, emerging from the *WATERS* Collaborative, a seven-year collaboration between Sonoma State University Center for Environmental Inquiry and Sonoma Water, a regional leader in Water Source Management for Sonoma County. With large increases of people experiencing homelessness (and a growing concern for a significant increase of unsheltered individuals due to the COVID-19 pandemic), Rising Waters' mission is to address "homelessness in watersheds" in order to improve water-related sustainability and resilience challenges in Northern California, find viable solutions, and raise the public's awareness of the complex issues that are faced. Rising Waters provides the *WATERS* Collaborative with unique opportunities for it was designed to help decision makers find solutions on this complex topic. Some key decision makers that make up the collaborative include leaders from water agencies, city members, and faculty to work together and bring public awareness to this existing challenge.

A majority of people experiencing homelessness in Sonoma County remain unsheltered and are long-term residents of the area. Given the difficulty of finding permanent housing, these people resort to living in riparian areas with little to no basic sanitation provided and turn to defecating near waterways which greatly put our water quality at risk. Rising Waters has a unique opportunity to raise public awareness for it is in alliance and has the full support of its community partners— Sonoma Water, City of Santa Rosa, City of Rohnert Park, the Russian River Watershed Association, and the North Coast Water Quality Control Board to influence change and find viable solutions to identify potential barriers to providing public restrooms in order to maintain access to basic sanitation. Rising Waters is able to utilize their positioning to work with their community partners to collaborate and directly obtain information that may not be readily available to facilitate the needs required to address their mission and provide data on the different implementations to be considered for the City of Santa Rosa.

2. *Using the PESTEL analysis framework, summarize the intersections of homelessness, water quality, and sanitation. What is the scale of homelessness within Sonoma County compared to elsewhere?*

PESTEL Analysis of Homelessness in Sonoma County

Political	• Different levels of local city and county officials, government, and state legislature • Right to shelter laws in California was introduced in 2020, however the proposal was vetoed. • Budget and spending determined by various local officials; determine necessary funding available to each organization.
Economic	• Local housing and labor market conditions resulting in lack of affordable housing with escalating rents and clear viewpoint to low-income housing gaps. • Low employment opportunities. • Higher poverty rates.

Social	● Change in population growth rates and its impact from COVID-19, probability of a significant increase of unsheltered individuals and higher figures of people experiencing homelessness overall. ● The United Nations Children's Fund (UNICEF) and the World Health Organization (WHO) recognized the human right to sanitation. ○ Important to note as of 2020, over half of the world's population lacked safe sanitation and lacked access to adequate restroom facilities. Lack of sanitation results in open defecation which we are seeing in Sonoma County, specifically with people experiencing homelessness. ● Number of persons experiencing homelessness in Sonoma County in relation to different counties throughout California is relatively high when compared to the state average.
Technological	● Bathroom installations have been relatively the same since the inception of portable toilets, Portland Loo founded in 2008, is a fairly new company that offers new designs and offers a potential for innovation (blue light emission, simplicity, etc.) ● Opportunity to make technological advancements in procuring data (PIT-counts, Census, water quality testing, mapping, tracking, etc.)
Environmental	● Water Quality (fecal contamination) from individuals living in riparian areas with lack to basic sanitation. ● Unprecedented events such as pandemic, exposure to severe weather events, fires/flooding, etc.
Legal	● Hearth Act: federal and state funding to help consolidate HUD's competitive grant programs. ○ 7 Performance Indicators: decreasing the length of homeless episodes, increasing placements in safe housing for those living outside, increasing placements in permanent housing for all homeless persons, reducing the percentage of people placed in permanent housing who return to homelessness, decreasing the number of people experiencing homelessness for the first time, increasing employment opportunities and incomes, and reducing the total number of people experiencing homelessness. ● Boise (2009) suit against the city in regard to violation against the 8th Amendment, discrimination/criminalization of homelessness (no place to go)

Political, Economic, Social, Technological, Environmental, and Legal factors are highly interconnected between homelessness, water quality, and sanitation. The impacts in each category as is shown in the PESTEL Analysis above all have a high likelihood of playing a role in any restroom implementation strategic decisions.

3. *Generate strategies that local leadership might use to reduce legal, social, and political barriers to providing restrooms for persons experiencing homelessness. Do any strengths, weaknesses, opportunities, or threats have the potential to play a role in how the local agencies included in this study might collectively address this issue?*

   Strategies that might be suggested following a review of the case include, but are not limited to:

   One opportunity for local leadership to reduce barriers to providing restrooms for persons experiencing homelessness is for the Sonoma County CoC Board to develop a strategic plan that clearly identifies immediate needs in balance with long-range performance measures. Effective performance measures should incorporate stakeholder inputs and desired outcomes, and follow the SMART (Specific, Measurable, Attainable, Relevant, and Time-Based) goal-setting framework. The strategic plan should include information on homeless services provided throughout the county by various government, healthcare, non-profit, volunteer organizations and their respective funding allocations to provide a holistic overview of services and identify gaps and opportunities for CoC prioritization. A CoC strategic plan would provide a better mechanism for County approval of sanitation implementation proposals, and create a platform for alignment with other strategic plans, such as the County General Plan and the Action Plan for the Russian River Watershed pathogen total maximum daily loads.

   Another strategy, in lieu of making a long-term commitment to one implementation over another upfront, would be to pilot temporary implementations at various locations for a defined period of time. This would allow leaders to test out portable toilets, shower/restroom trailers, or expanded hours at existing facilities in order to prove effectiveness, identify unforeseen issues or requirements, and solicit feedback from stakeholders prior to committing additional resources to run those implementations long-term, seeking more rigorous approvals for long-term or permanent installations, or allocating the capital for a permanent installation. For example, the Finley site that was established temporarily during COVID-19 and included portable toilets and mobile shower/restroom trailers offered local leaders the opportunity to see these implementations in action and collect cost data and community feedback. While many neighbors initially opposed the Finley site, after seeing how it operated and how effectively it served the community, they came to embrace it. Strategic pilot programs would offer leaders the opportunity to try similar implementations elsewhere.

   Local organizational leaders could also partner with pre-designed hygiene programs, such as the San Francisco based non-profit organization LavaMae, to aid in the establishment

of additional hygiene programs within Sonoma County. LavaMae can provide regular services, pop-up care sites, or a complete do-it-yourself toolkit. The toolkit includes information on developing a business plan, permitting and regulatory considerations, vehicle selection, water and waste management, operational guidelines, staffing, budget templates, site selection, metrics tracking and more. By choosing to partner with pre-designed programs such as LavaMae, local leaders could potentially lower administrative burden and planning costs, reducing these barriers to implementation.

The following strengths, weaknesses, opportunities, or threats have the potential to play a role in how the local agencies included in this study might collectively address this issue:

SWOT Analysis

STRENGTHS: ● Rising Waters has a steering committee whose members have diverse backgrounds and experiences including homeless services, water quality, environmental research, public health, strategic management, and education. ● Rising Waters and the WATERS Collaborative has received ongoing support, partnership, and funding from Sonoma County Water Agency and the Board of Supervisors. ● Sonoma County's CoC board features diverse representatives and they are focusing on developing a strategic plan in 2021. ● Sonoma County has multiple local government agencies, non-profits, and religious organizations that are all committed to providing homeless services and have invested in finding solutions. ● Sonoma County conducts a Homeless Census annually, even though the HUD PIT count is only required every 2 years. ● Sonoma County, and in particular the City of Santa Rosa, have significantly increased homeless services funding since 2010.	**WEAKNESSES:** ● Potential for indecision or project competition due to the number of differing organizations or perspectives ● High potential for organizational silos ● The approval process for projects can be long and difficult to navigate, interested parties might be unclear on where to start or how to proceed with site selection, approvals, utilities, and permitting requirements.
OPPORTUNITIES: ● The CoC has the opportunity to establish a strategic plan that balances long-term goals with immediate needs. ● Local leaders should align and integrate their strategic goals to most effectively allocate resources and reach shared goals.	**THREATS:** ● Limited funding allocations means that many organizations and even projects within organizations are competing for funds. Not everything can be funded. ● Temporary restrooms are not the highest priority in the Housing First model, which has been widely adopted as the preferred strategy for addressing homelessness. ● There are many public opinions influencing local leadership, such as concerns from residents, business owners, and those who believe providing restrooms may create an "attractive nuisance" that increases problems. ● Additional threats due to emergency events such as the COVID-19 pandemic, floods, fires, or other unprecedented event.

Extension of SWOT analysis (SO, ST, WO, WT):

SO Strategies: furthering strengths into additional opportunities; Rising Waters can work alongside the Sonoma County CoC Board to develop a strategic plan that clearly identifies immediate needs in balance with long-range performance measures that incorporate stakeholder inputs, desired outcomes, and follow a SMART (Specific, Measurable, Attainable, Relevant, and Time-Based) goal-setting framework.

ST Strategies: utilizing strengths to reduce vulnerabilities to threats; Rising Waters can best utilize their unique positioning with their local partners to ensure they are able to improve water-related sustainability and resilience challenges in Northern California, find viable solutions, and raise the public's awareness of the complex issues that are faced.

WO Strategies: overcoming weaknesses to pursue opportunities; Rising Waters can pilot temporary implementations at various locations for a defined period of time in lieu of making a long-term commitment to one implementation over another upfront. This would provide Rising Waters' with additional data to utilize for determining which locations would be most ideal without having to make a long-term commitment. Additionally, Rising Waters could conduct water quality studies to address data gaps and determine the relationship between encampments and fecal contamination locally. This data could help to quantify the problem and identify "hot spots" for strategic restroom implementations in the future.

WT Strategies: utilizing weaknesses to protect against external threats; Rising Waters has observed a variety of public barriers - concerns, opinions, etc. In order to ease the public's concerns about people experiencing homelessness and the services the city hopes to provide, Rising Waters can better communicate their goals, overall process, and provide solutions to help against the barriers faced from the public.

4. *Evaluate given financial data available for the various implementations and conduct an analysis comparing the costs of each.*

The five alternate restroom strategies discussed in the case study can be compared by their respective one-time costs (infrastructure setup, installation, etc.), ongoing costs (cleaning, maintenance, security, staffing, etc.), and other potential costs (vandalism, insurance, environmental and legal fees). See the table below for an example comparative cost analysis:

Cost Comparison of Five Alternate Restroom Strategies

Strategy	One-time costs	Ongoing Costs	Other

Portable Toilets	$0-$300 pickup/delivery fees, may be included in rental cost	$1,200/year per restroom, month-by-month rental with standard weekly service & cleaning	Potential costs related to vandalism, tipping/spills, $60-$100 each for additional cleanings if necessary
Mobile Shower/ Restroom Trailer 1. Baseline cost est. based on providing service 4 days/wk, 5.5 hours day + setup time) + 1 ops day for servicing	$102,300 for truck, trailer, vehicle wrap, DMV fees, generator + $1,982 initial supplies	$12,672/yr water, propane for hot water, laundry of towels, cleaning supplies + $6,000/yr trailer service & maintenance +$264,564/yr staffing (3 employees, 1 manager)	Insurance costs
2. Scaled cost est. based on providing access to this service 24/7	$102,300 for truck, trailer, trailer & vehicle wrap, DMV fees, generator + $62,900 for 2nd trailer, wrap, DMV fees + $2,000 additional supplies for 2nd trailer	$38,016/yr water, propane for hot water, laundry of towels, cleaning supplies (3 shifts) + $12,000/yr trailer service & maintenance (2 trailers) +$793,692/yr staffing (3 shifts)	Insurance costs
Portland Loo (Permanent)	$250,000	$12,000/yr	Rigid construction and graffiti-proof coating minimize potential vandalism costs
Expanded Hours (at existing facilities)	$0-$200,000, depends if ADA retrofits are needed	$111,250/yr cleaning & security	May require additional staffing
Doing Nothing	$0	$0	Costs up to $60,000 per hazardous waste cleanup, potential lawsuits up to 100,000, and unquantified externalities: social, public health, environmental costs, and potential loss of tourism/ recreational income

While cost is not the only deciding factor for decision makers, one key takeaway of the analysis above is that each implementation, even “Doing Nothing,” comes with potential costs that should be considered.

5. *Given the alternatives described in the case, what are pros and cons of each option? Are there other alternatives not suggested in the case? What option for providing restrooms should Rising Waters recommend to local leadership?*

As was described in the case, there were five different implementations that the city could choose from and implement. However, it should be noted that each implementation has its advantages and disadvantages as is illustrated in the table below:

Pros & Cons Analysis of 5 Restroom Implementations/Alternatives

Restroom Implementation	**Pros**	**Cons**
Portable Toilets → Utilities Required: ● None → Considerations for Location: ● Placed on flat surfaces to limit tipping of unit ● Convenient and accessible locations	+ Versatile/Ease of Use Self-contained, can be transported and set up almost anywhere that there is level ground available. + Convenience Ease of use, designed in a way that makes them accessible to everyone including individuals who have a mobility disability (various design features available). Can be rented for as long as the restroom unit is needed to fill the need. + Cost Effective A temporary and cost-effective solution to accommodate the public.	- Vandalism When left unsupervised, they are susceptible to a variety of elements, notably vandalism. Most common is tipping over which creates a mess of human waste inside of its confines which will require a disinfecting process. Note- can also be tipped over due to weather and high winds. - Lack of Plumbing Since porta potties are not connected to a sewer line, they hold waste until emptied and can lead to a sewage smell if overused and/or not cleaned properly.
Mobile Shower/Restroom Trailers → Utilities Required: ● Vehicle to transport trailer, fuel, insurance and registration ● Power hookup ● Water hookup (if water tank size inadequate) ● Propane tanks → Considerations for Location: ● Dependent on water tank size, may need to be connected to water source	+ Features Unlike portable toilets, shower trailers are equipped with water tanks. They provide comfort and offer privacy to take care of one's needs. Most have individual temperature controls, countertops for personal items, in addition to both a toilet and shower. + Accommodation With larger sized trailers, can accommodate multiple guests at the same time to limit restroom wait times. + Sanitation Ventilation and not conducive to mold/mildew for it is designed for all types of environments and do not have to worry about lack of plumbing. + Convenience Ease of use, designed in a way that makes them accessible to everyone and ideal to use for disaster relief areas as a temporary solution.	- Cost Higher costs associated to purchase these units when compared to portable toilets but still more affordable than costs associated with permanent installations. - Hours of Operation Only available for set hours each day, if additional hours needed for 24-hour usage, additional costs would be incurred to purchase additional trailer and pay wages of staff (three different eight-hour shifts to monitor facility while in operation). - Permitting/Operations For proper operation, city permitting is required and dependent on water supply, connection is required if the trailer does not come equipped with a holding tank. To transport trailers, vehicle DMV permitting is required as well. To operate trailers, staffing is needed to set up and monitor implementation.
Portland Loo	+ Permanent	- Public Barriers

(Permanent) → Utilities Required: ● Water and Sewer hookups ● Power → Considerations for Location: ● Locations near water & sewer lines which can limit installations in riparian areas	No need to worry about access to a restroom as this installation is permanent and available to use at any time. + Convenience Ease of use, designed in a way that makes them accessible to everyone and dependent on the city, can be available 24 hours a day at no cost. Functional year round and can be installed where a need is greatest such as was the case for Santa Rosa, installing it in a central location. + Features Gender neutral bathroom installation that features a modern sleek design which is easy to recognize. Constructed from durable stainless steel, graffiti proof coating, no sink inside to limit loitering, no mirrors, and blue light emission to prevent drug use inside the facility. + Installation From order to delivery, it can take as little as 90 days to install.	Growing concern that permanent installations would attract loiterers, drug use, prostitution...essentially create more problems than it would be worth. Cost is also a concern, too expensive to purchase, operate, and maintain. - Implementation Cost Unit costs vary depending on the needs and features chosen...start at $96,000 not including installation costs or yearly maintenance costs to operate. - Installation Most units need to be installed in locations that can be connected to water and sewer which limits locations for individuals living in or near riparian areas where it is more challenging to install. - Timing Can be difficult to come to a decision with permitting, city officials, public commentary...for the City of Santa Rosa, timing was a barrier in delay of opening due to the COVID-19 pandemic.
Expanded Hours (at existing facilities) → Utilities Required: ● Existing, but retrofits may be required → Considerations for Location: ● Location proximity to needs and demands, safety, and security	+ Existing Facility Given that the restroom would already be in place, no costs associated with acquiring this restroom facility which would save the city fees (in relation to the Portland Loo where that was a brand-new implementation and new permitting, etc., was required/needed). + Permanent No need to worry about access to a restroom as this installation is permanent and available to use depending on what hours it is in operation, also free to use, no costs associated. + Location Easily accessible as they are typically located in parks or buildings that are located within the city.	- Retrofit Costs To convert existing facilities and expand hours of operation, a one-time ADA retrofit costs payment between $50,000-$200,000 required. - Maintenance Costs Incur additional maintenance costs of $111,250/year to cover costs of keeping in operation and to cover wages for security personnel needed to monitor the facility. - Public Resistance/Barriers Growing concern that these restrooms are located in areas that are not as visible and most of these bathrooms are located in buildings or parks that are otherwise closed in the evening.
Doing Nothing → Utilities Required: ● N/A → Considerations for Location: ● N/A	+ Funding Would save the city funding that could be better used elsewhere to find permanent solutions to the complex problem as opposed to spending city funding on temporary solutions that would only provide short term relief.	- Watershed Pollution If nothing is done, growing concern of pollution in our waterways and fecal contamination. - Risk Exacerbates the risk associated with the problem as nothing is being done to control or aid in finding solutions. - Lack of Funding Insufficient funding available to remedy the solution.

From the implementations mentioned throughout the case study, there were three options not considered. The first option would be to install a self-contained, self-cleaning, unisex public toilet (an electronic toilet as they are sometimes referred as) as has been implemented throughout the city of San Francisco, CA and other major cities. Those installations are similar to that of the Portland Loo in that the toilet is self-contained, the difference being that depending on whether there is a fee associated with usage, the toilet is accessed by pressing a button where a door slides open, the user enters, and the door shuts for privacy. Once the user has finished and exited, a wash cycle begins inside the facility and disinfects itself automatically. After the wash cycle (approximately 60 seconds), the toilet is able to be used again. Another alternative implementation to consider would be a composting toilet (dry toilets) which are environmentally friendly and a cost-effective installation. Composting toilets do not use any water which means that they do not require a connection to septic tanks and/or sewer systems. They are a good option for rural areas and for individuals living in riparian locations. Lastly, a third alternative would be a permanent installation; Portland Loo was mentioned but instead, the city could choose to build a new restroom facility that was more a traditional design (single stall or multiple), similar to existing facilities in public parks.

Each implementation has the potential to fulfill needs, depending on the parameters of the location and situation needing to be addressed. To help Rising Waters and future decision makers determine which implementation best suits the needs for a given location, please see the provided decision tree in **Exhibit IM-1** for recommendations.

Wrap-Up

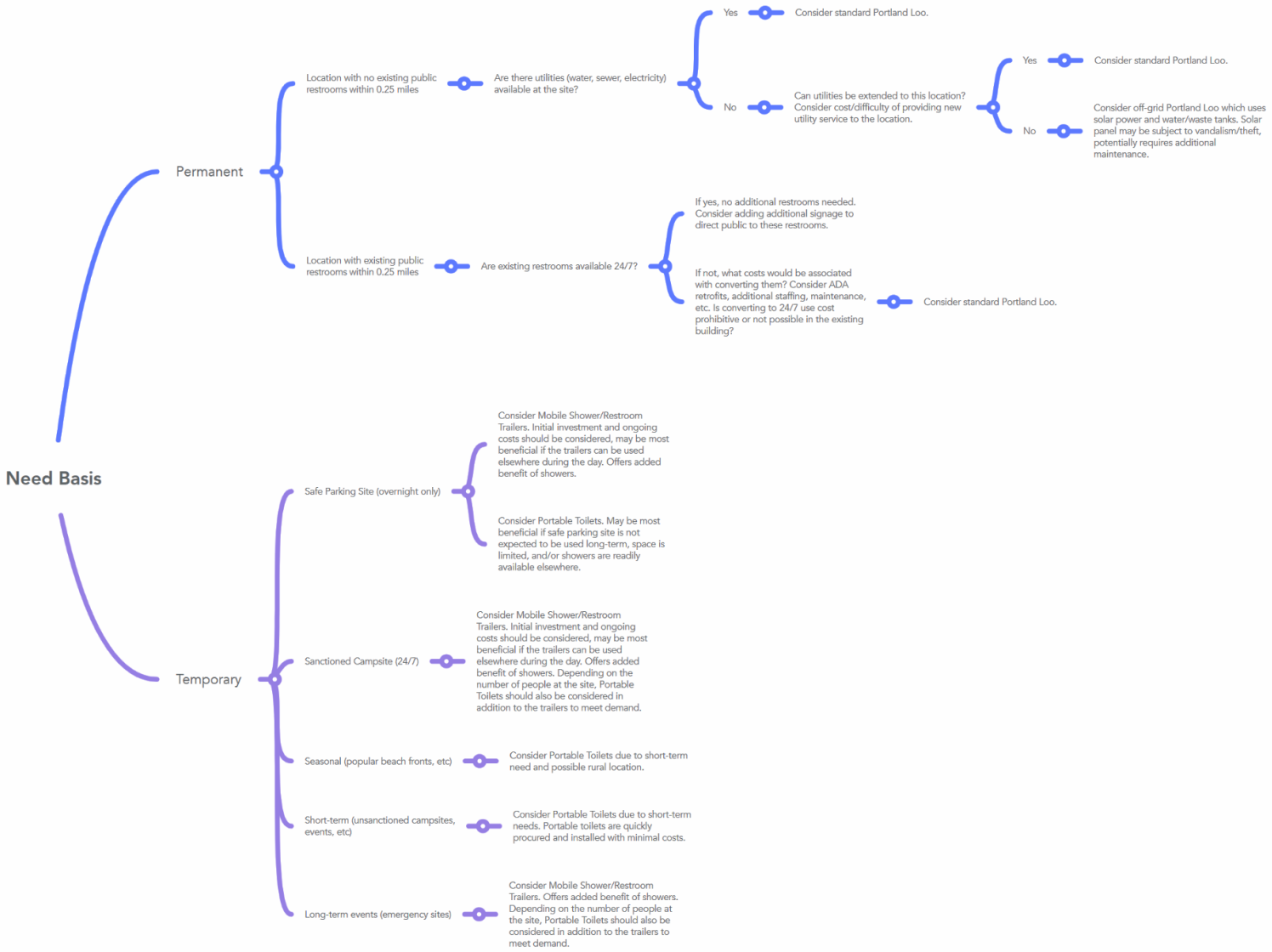
The challenge to identify strategies that reduce the barriers to providing restrooms for individuals experiencing homelessness was clearly a complex and greatly intersectional issue faced by the Rising Waters Initiative in 2021. Rising Waters also faced these challenges within the larger context of demands from multiple macro-environmental forces - ongoing public health and economic concerns caused by the COVID-19 pandemic, the scale of homelessness within Sonoma County and California, unsafe levels of fecal contamination within the Russian River watershed, funding limitations, legal requirements, social equity, and the overall fragmentation of leadership around these various issues.

The experiences and lessons learned from the five restroom implementations methods presented within the case exhibited the wide array of concerns and potential consequences that leaders would have to consider when making a recommendation. As detailed in the pros and cons matrix and decision tree, there was not a one size fits all public restroom solution, and each implementation would need to be selected based on a variety of relevant factors including length of need, location, utilities, funding, and ultimate goals.

Choosing whether or not to implement a public restroom in a given location, and what type of implementation to proceed with, would impact a variety of stakeholders including individuals experiencing homelessness, the general public, neighbors, local business owners, environmental groups, tourists, and several government/non-profit agencies. In addition, implementation methods piloted and proven within Sonoma County would also have the potential to serve as an example for communities across California and the nation with the same challenges.

As this case study focused on just five public restroom implementation methods within the City of Santa Rosa, there remain research opportunities to further explore additional alternatives, such as traditional public restrooms, self-contained self-cleaning restrooms (electronic toilets), and composting toilets (dry toilets). Additional research that clearly identifies all invested organizations and strategically maps their initiatives, goals, and available funding resources would also be beneficial to align organizations regionally. As water quality data was limited, there is also an opportunity for further research into the connectivity of homeless encampments and severity of fecal bacteria pollution in nearby waterways, the data from which could help to identify specific locations for strategic implementation of public restrooms that maximize sanitation, beneficial use, and reduction of pathogens entering in our watershed.

Exhibit IM-1: Example Restroom Implementation Decision Tree



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