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Publication Date

2021-05-01

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Rivers & Cities

16 May. 2021

Water Pollution Resulting from Homeless Encampments in Creeks: Programs in Sacramento,
Santa Cruz, and San Pablo

1. Abstract: The purpose of this research is to provide a holistic snapshot of how different Sacramento, Santa Cruz, and San Pablo monitoring and mitigating water quality issues posed by tent encampments in waterways. For Sacramento, a look into the “Mile Stewards” Program illustrates one effective effort for removing debris from the American River Parkway. In Santa Cruz, the Downtown Streets Team incorporates people experiencing homelessness into their organizational model, which provides the people a sense of purpose and helps keep the banks of the San Lorenzo River clean. In San Pablo, there are ongoing trash removal efforts at both a city level through volunteer and city employee support and at a county level through CORE Creeks. All three cities are on the path to incorporating necessary social programs with environmental protection to work with people experiencing homelessness and tackle water quality issues resulting from tent encampments in the riparian corridor.

Introduction (Problem Statement):

The growing number of tent encampments alongside riparian corridors in California poses many environmental issues including the buildup of trash pollution and in some cases harmful bacteria such as *E. coli*. Tent encampments can be defined as “collections of tents or other non-permanent dwelling structures” (Finnigan 2021). Both large and small cities across the United States have examples of homeless encampments in creeks and rivers, but very few of those cities have programs and groups to target these issues. Stigmatization and over-policing push people experiencing homelessness to the peripheries of cities and counties or .the privacy and cover of riparian vegetation along waterways. As the number of people experiencing homelessness increases, it is crucial to take inventory of what efforts exist to mitigate water pollution caused by homeless encampments while also remaining sensitive to the vulnerability of homeless populations.

Many of the programs that aim to reduce pollution generated by homeless encampments today started with the creation of the Clean Water Act in 1972. (River Network 2020) The main objective of the Clean Water Act is “to restore and maintain the chemical, physical and biological integrity of the nation's water” and “to eliminate the discharge of pollutants which provides wildlife and recreational opportunities” (River Network 2020). The Clean Water Act requires federal, state, and local governments to create regulations and implementation plans to support different habitat and recreational uses (River Network 2020). In addition, the National Pollutant Discharge Elimination System (NPDES) is the main program for controlling point source pollution that incentivizes regional water quality control boards to eliminate specific sources of pollution like the pollution generated by encampments. Point source pollution is defined as “any discernible, confined, and discrete conveyance...from which pollutants are or

may be discharged” (National Pollutant Discharge Elimination System (NPDES) 2020). Higher standards for NPDES permits necessitate action to remove potential point source pollutants.

Currently, there is a range of pollutants generated by homeless encampments in rivers and creeks. Main sources of pollutants include plastic debris and other trash, used needles, shopping carts, and human waste. The breakdown of trash produces microplastics that infiltrate the living and non-living environment while needles and human waste pose a biological threat to both the visitors who recreate in rivers and creeks and the homeless populations using the water to conduct everyday cooking, cleaning, and bathing activities. In addition, the people experiencing homelessness in the riparian corridor are particularly vulnerable to flooding, fire, and the sanitary conditions created by encampments (Boucher, 2013).

Alongside environmental and human aspects of encampments, camps are getting increasingly crowded due to the September 2018 Ninth Circuit Court of Appeals decision in *Martin v. Boise* and the COVID-19 pandemic. Under the Ninth Circuit court’s DECISION, “if there is no option of sleeping indoors, the ” government in western states of the Ninth Circuit “cannot criminalize indignant, homeless people for sleeping outdoors on public property” (Martin et al.). This court ruling alongside Center for Disease Control (CDC) guidelines, which suggest “if individual housing options are not available, allow people who are living unsheltered or in encampments to remain where they are,”(CDC) hinder the typical abatement process in cities. The number of people experiencing homelessness in the United States was 2.2% higher in 2020 at the beginning of the pandemic and has likely increased with the nationwide “economic disruption and housing crisis” (“New Report Shows Rise in Homelessness in Advance of COVID-19 Crisis”).

The amount of unsheltered homelessness has also increased, which suggests growth in encampments (“New Report Shows Rise in Homelessness in Advance of COVID-19 Crisis”). Unsheltered people experiencing homelessness can be defined as those who “[reside] in a place not meant for human habitation, such as cars, parks, sidewalks, abandoned buildings (on the street)” (*A Guide to Counting Unsheltered Homeless People*). The rise of people experiencing homelessness often results in more trash and further exacerbates sanitary conditions along waterways. “Newcomer camps,” or camps with people who are newly experiencing homelessness, tend to be less organized and contain individuals with less investment in keeping the camps clean (DeVuono Powell, 2013). Changing community dynamics within encampments can cause more disorganization and, in turn, more unchecked pollution.

Study Approach:

To assess monitoring programs for pollution caused by homeless encampments in different-sized cities, I reviewed literature and news articles to create a foundation for my research, then interviewed city staff familiar with programs in and around the San Francisco Bay Area (See Appendix A for interview questions). This study explores the different programs in existence, the successes and gaps in those programs, and a reflection of potential steps forward following the pandemic.

To carry out this study three different sized cities were chosen—one large (>100,000 residents), one medium (50,000 to 100,000 residents), and one small city (<50,000 residents), respectively. Of the three, Sacramento is the largest at approximately 500,000 people on over 97.92 square miles of land (*Demographics - City of Sacramento*). According to a study conducted by Sacramento County Point In Time count (PIT), on average, 5,570 people remain unhoused

each night (“Sacramento County Point in Time (PIT) Homeless Count Shows 19% Rise in Homelessness”). Santa Cruz is considered a medium-sized city with a current population of approximately 64,522. In Santa Cruz, 2,167 people experiencing homelessness on a given night (*U.S. Census Bureau QuickFacts*). Of those experiencing homelessness in Santa Cruz 865 are unsheltered (IRWMP). Of the three cities considered, San Pablo is the smallest with an estimated population of 30,697 in 2019 (*San Pablo, California Population 2021 (Demographics, Maps, Graphs)*). The San Pablo 2020 PIT count recorded 2,277 people experiencing homelessness on any given night in Contra Costa County and 67 unsheltered people experiencing homelessness in San Pablo (*Contra Costa County: Annual Point in Time Count Report*).

Results:

1. Sacramento

The city of Sacramento, like many other cities across the United States, has experienced a rise in the number of people experiencing homelessness each year. Whereas in 2017, the number of people experiencing homelessness was 3,665 on a given night, in 2019 that number had gone up to 5,570. Given the rising number of people experiencing homelessness, that number has likely increased substantially in the time since the start of the pandemic (“Sacramento County Point in Time (PIT) Homeless Count Shows 19% Rise in Homelessness”). Due to the geographic location of the city nestled between the American and the Sacramento rivers, there is an inevitable intersection between the homeless encampments and the riparian corridor. There is no publicized number of encampments along either river; however, there are very few places free from evidence of past or present human habitation.

In 2020, the City of Sacramento passed a ban to prevent people from setting up camps within 25ft of critical infrastructure and outside public buildings. Critical infrastructure includes bridges and levees, both common physical features along the Sacramento and American rivers. The ban was proposed following continued responses to illegal fires—1,000 in 2019—and noticeable digging into critical levee infrastructure (“Sacramento Bans Homeless Camps near River Levees, Public Buildings”). While both fires and digging into levees pose serious risks, homeless activists argue that the ban further criminalizes unhoused folks by forcing them to seek refuge in urban and residential areas.

The location of encampments in the riparian corridor often correlates with the proximity of services. In Sacramento, there are many services for unhoused people located adjacent to the river corridor, between N 12th Street and N 16th Street (Figure 1). Commonly referred to as the “Dos Rios Triangle,” the proximity to basic human needs makes the nearby American River Parkway a prime location to set up camp for those looking to be more removed from the city (ABC10, 2019). Following the *Martin v. Boise* decision, people living along the river are less concerned with being fined for camping along the river corridor. However, the tickets and fines that were handed out for camping before *Martin v. Boise* decision are now handed out for littering and tying ropes to trees. While the intention behind these tickets is to hold unhoused people to the same rules and regulations experienced by other park users, they may ultimately exacerbate the negative environmental effects they aim to solve. For instance, repeated ticketing for littering may push people to be more covert about where they dispose of their trash or set up their camp. As a result, park rangers, city employees, and volunteer organizations may miss

pollution hotspots when conducting trash cleanup.

The City of Sacramento: Services for Unhoused People in Proximity to the American River Parkway



Figure 1: The City of Sacramento Services for Unhoused People Experiencing Homelessness in Proximity to the American River Parkway. Aerial image source: (*Google Earth*)

Assessment of encampments along the Sacramento and American Rivers is key to understanding the impacts of encampments on water quality. Currently, there are no groups in the area dedicated to the cleanup of pollution specifically tied to homeless encampments. However, different groups organize trash cleanups along both rivers. For instance, the American River Parkway Foundation hosts an annual event called the Great American River Cleanup where volunteers go out in the American River Parkway and collect trash. In 2019, volunteers

collected and removed 140,285 pounds of trash. The trash collection data for 2020 was incomplete due to gathering restrictions caused by the pandemic (design@outbacksolutions.com).

The American River Parkway Foundation also organizes the “Mile Stewards” program, in which individuals or organizations can “adopt” “each of the 23 miles of Parkway along both banks of the river” (design@outbacksolutions.com). “Mile Stewards” are committed for 2 years, in which they must commit volunteer time to collect trash, remove weeds and maintain trails. There are also financial Mile Sponsors who pay \$1,500 each year to provide funds for the responsibilities carried out by the Mile Stewards (design@outbacksolutions.com). While the Mile Stewardship Program an effective way to get the community involved in socially distanced trash removal and maintenance of the public space, the volunteers alone may not feel comfortable or safe collecting trash near homeless encampments and people experiencing homelessness may feel there is an invasion of privacy.

While the pandemic may have hindered some programmatic efforts, it has also reinforced some of the services provided to people experiencing homelessness. Since 2020, Sacramento County has devised a 19.4-million-dollar plan to establish isolation/quarantine units and temporary housing. and to pursue new permanent supportive housing (Sacramento County 2020). As part of this plan, Sacramento has created the Sacramento Homelessness COVID-19 Response Team to encourage a range of sanitary precautions such as setting up tents with at least 12 feet of space between. They have also set up 40 handwashing stations and 40 toilets in 27 locations to ensure that sites with the largest number of people have access (See Figure 1) (*Sanitation-Stations-Map-5-12-20.Png (1578×1200)*). 24-hour access to sanitary equipment may

prevent human solid waste from entering the river corridor but is by no means a permanent solution.

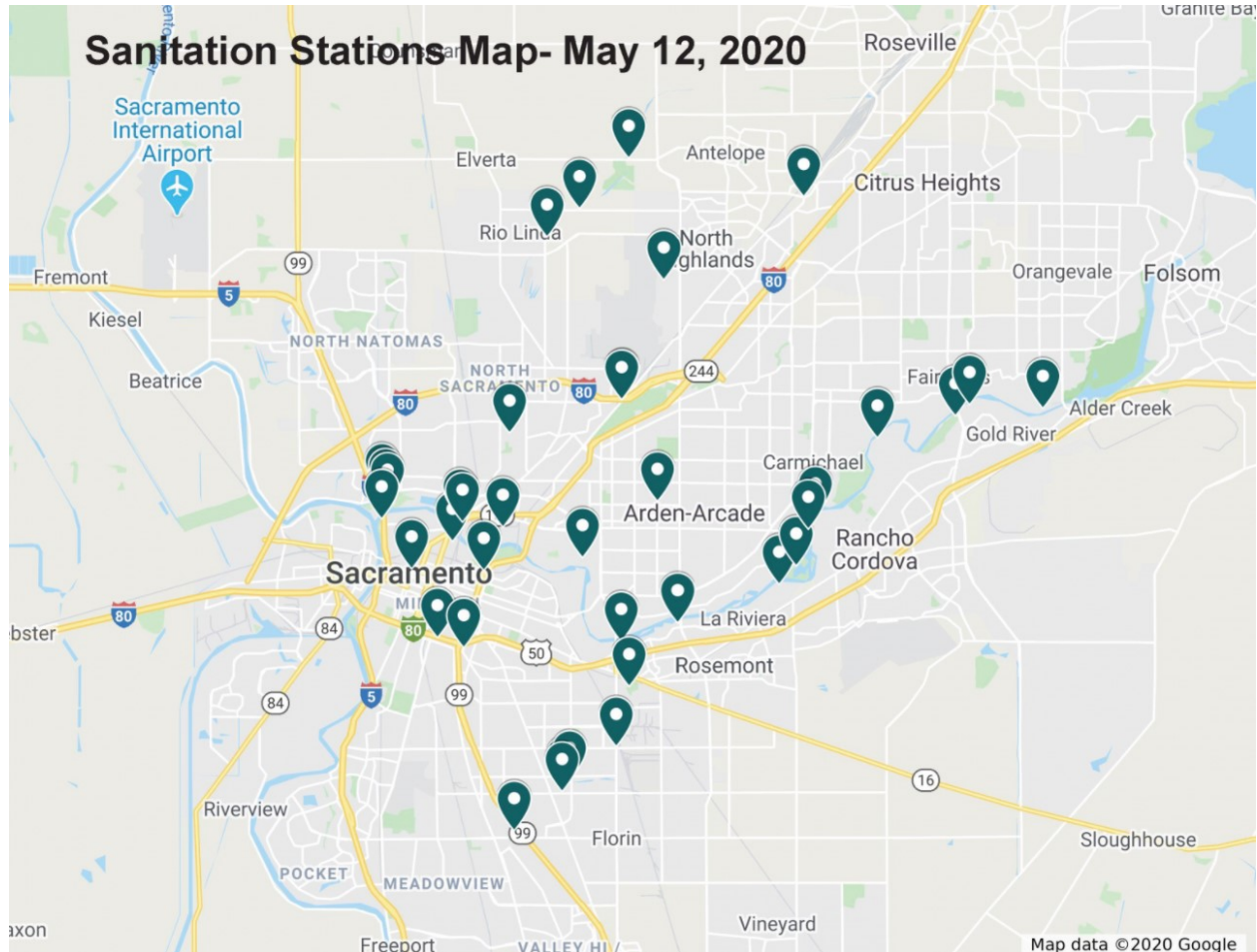


Figure 2: Sanitation Stations for People Experiencing Homelessness in Sacramento. Aerial

image source: (*Sanitation-Stations-Map-5-12-20.Png (1578×1200)*)

2. Santa Cruz

In Santa Cruz, the number of people experiencing homelessness has been variable in the past decade, however, like Sacramento, the number of unhoused individuals has likely increased due to the Covid-19 Pandemic (“New Report Shows Rise in Homelessness in Advance of COVID-19 Crisis”). In addition, CDC guidelines along with the *Martin v. Boise* decision have

allowed unsheltered people experiencing homelessness to take residence in the riparian corridor with less concern about being moved. According to the Mayor of the City of Santa Cruz, there are six shelters located in the city limits that house 275 to 300 people each night and 200-400 people in unsanctioned camps (IRWMP). There is one sanctioned encampment in city limits known as the Santa Cruz Benchlands Camp. The sanctioned tent encampment is located along the San Lorenzo River and in the proximity of services for people experiencing homelessness (Figure 2). While the sanctioned encampment does not equate to a permanent housing solution, it does provide a solution that meets the needs of the people experiencing homelessness and the needs of the sensitive riparian habitat. The camp is managed by the city, county, and the residents, who all take part in ensuring the high safety and sanitation threshold of the camp (Pierce). With .organized trash with adequate trash and sanitation services, there is less of a threat of pollution in the riparian corridor, fire risk, and sanitation hazard to the larger community.

The City of Santa Cruz: Services for Unhoused People in Proximity to Creeks in the City of Santa Cruz



Figure 3: The City of Santa Cruz Services for People Experiencing Homelessness in Proximity to the Creeks. Aerial image source: (*Google Earth*)

To learn more about programs and efforts addressing the intersection between water quality and homelessness in Santa Cruz, I attended the online Integrated Regional Water Management Summit on May 5th, 2021. There, I heard from Rosemary Menard, the water director of the City of Santa Cruz, about concerns about the presence of bacterial, chemicals, and pharmaceuticals due to the presence of tent encampments along the San Lorenzo River. She argued that drinking water treatment “cannot always be successful in removing or inactivating contaminants” and expresses concern for the proximity of homeless encampment sites to the source water intake for the city of Santa Cruz (IRWMP). Menard emphasized how there should

be a focus on “sanitation for those experiencing homelessness” but also protection of the “larger community from public health threats in source water protection zones (IRWMP). I found that in Santa Cruz, the primary programs and organizations are focused on homeless prevention, outreach, infrastructure, shelters, safe housing, and affordable housing development (*Homelessness | City of Santa Cruz*). While these programs appear to be successful in outreach and issues about the people experiencing homelessness, none of them deal specifically with the intersection between homeless populations and water quality. I found that, to conduct tent encampment abatement and trash removal, the city coordinates with the police and fire department, mental health workers, and outreach programs like “the county’s HOPES program, the Downtown Outreach Worker program” and various sheltering programs (*Homelessness | City of Santa Cruz*).

Downtown Streets Santa Cruz was one of the only programs I found that—in some cases—targets trash and refuse removal in the creek and river corridor. The mission of the Downtown Streets organization is to bring low-income and unhoused individuals through their “work-fist” model. Under this model, low-income individuals have opportunities to participate in beautification projects around their community. Those who stay on through the initial phases of the program receive non-cash stipends to “help cover their basic needs” and in-house services to help find housing or a job (*Downtown Streets Team - Ending Homelessness Through The Dignity Of Work*). This model seems to be effective in that it provides opportunities for low-income men and women while also increasing awareness on the importance of keeping the community free from trash and refuse. The Santa Cruz Downtown Streets Team works on cleanup projects along the San Lorenzo Riverwalk where they remove trash and refuse from the levee (*Downtown Streets Team - Ending Homelessness Through The Dignity Of Work*). Likely, some of the trash

and debris removed from the levees along the San Lorenzo Riverwalk is associated with either past or present homeless encampments.

3. San Pablo

In Contra Costa County, the unsheltered population count was at 1,570 people in 2020 (*Contra Costa County: Annual Point in Time Count Report*). This number has undoubtedly risen since the start of the COVID-19 pandemic because many options for housing have been closed due to safety concerns and CDC guidelines (CDC). Because the bulk of the programs for people experiencing homelessness intersected The City of San Pablo, The City of Richmond, and North Richmond, I decided to narrow my search for programs that deal with pollution caused by homeless encampments in creeks to Wildcat Creek and San Pablo Creek (see Figure 3). To understand the programs in place to protect the waterways in San Pablo, I spoke with Amanda Booth, Senior Management Analyst of Environmental Programs for the City of San Pablo, and

John Steere, Watershed Planner for Contra Costa County.

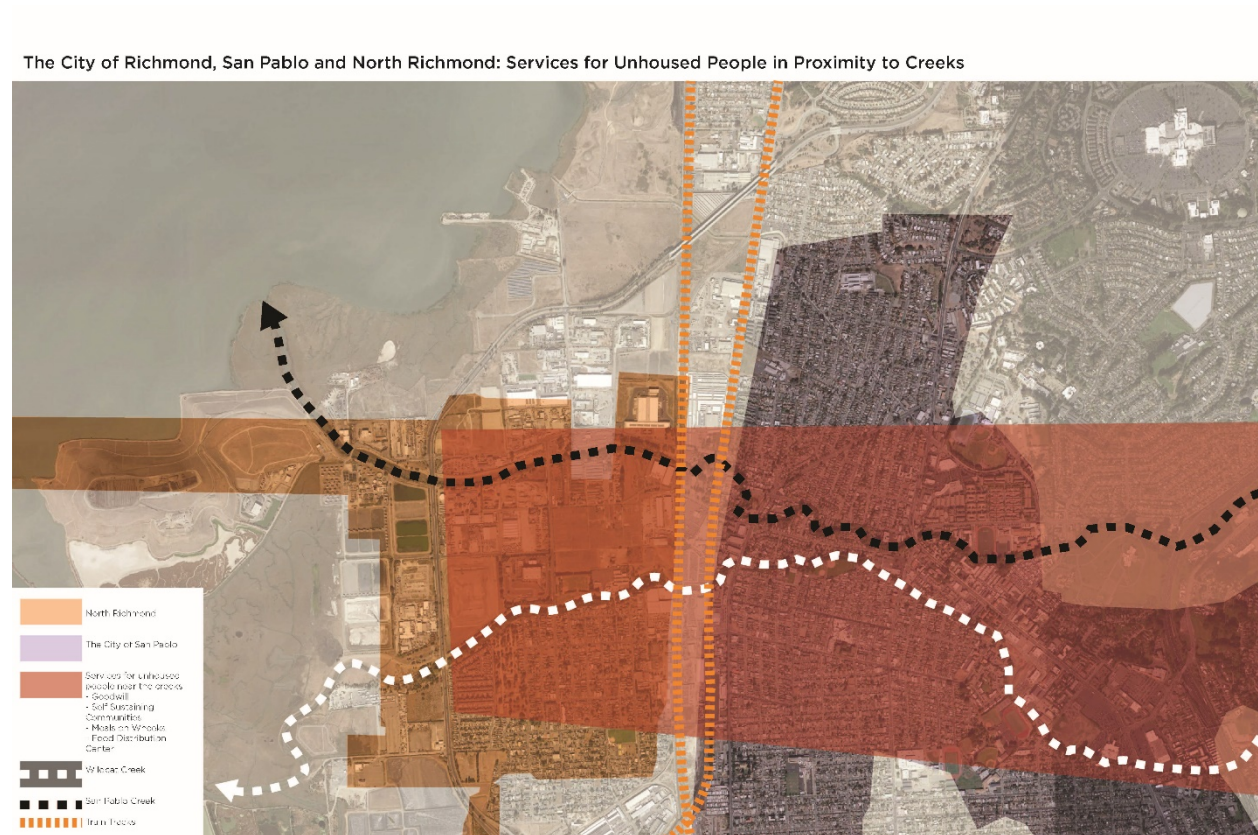


Figure 4: The City of Richmond, San Pablo and North Richmond Services for People Experiencing Homelessness in Proximity to Wildcat Creek and San Pablo Creek. Aerial image source: (*Google Earth*)

When talking to Amanda Booth, I learned about the different efforts happening in San Pablo. For instance, much of the awareness surrounding unhoused people living in the riparian corridor is due to the Path to Assist the Transition from Homelessness (PATH) pilot program (Booth). The goal of the PATH program was to understand the extent of the homeless tent encampments in San Pablo. To gain an understanding, PATH mapped the general unsheltered population, made a heat map to show where the tent encampments are located, and did outreach with people experiencing homelessness to gain a sense of what resources would be most

effective. The program was extensive, but also expensive and culminated in a presentation to the city council in 2019 (Booth).

As a result of the data collected by the PATH program, the city was able to further engage in topics surrounding homelessness and develop policies and procedures for red-tagging (removing) tent encampments for the riparian corridor in a way that does not criminalize the people living there. From the time of the PATH program, the city has started to engage in its own Coordinated Outreach, Referral & Engagement (CORE) team. They also have a waste disposal task force in the city who take part in the trash and human waste clean-ups (Booth).

When asked about how programs and policies were changing due to COVID, Booth said that the county guidance for COVID is very vague for instance, and can cause problems when the city is faced with the question of whether or not to red tag. In addition, all the shelters in Contra Costa County have been shut down due to COVID which prevents the cities from offering individuals an alternative resting place. According to Booth, this can be very frustrating for the cities and while San Pablo has reduced the amount that they red-tag encampments, there is still the ever-present issue of encampments being removed because of fire risk. In one scenario, the San Pablo fire department was called out 22 times in 40 days. With so many calls, the fire district deemed that the encampment was a health and safety risk and had to be moved. In addition, chemicals caused by fires can be detrimental to the riparian habitat (Booth).

The trash as the result of tent encampments along the riparian corridor is also a problem in San Pablo. When asked “what would you change about your program,” Amanda Booth responded that while there are many positives in knowing where the encampments are and what the problems associated with the intersection between water quality and encampments are, the

process of removing encampments before they cause negative impact to the water quality in San Pablo is still imperfect. Trash removal is expensive and often difficult to coordinate with the surrounding cities. Booth said that trash removal is a big priority before the first rain of the season and during the rainy season but is let go in the summer months. San Pablo, the railroad, Contra Costa County, and Richmond all coordinate to do their pre-rain trash clean-up but capturing everything is futile due to the transient tendencies of people experiencing homelessness (Booth).

In my research, I also learned about CORE Creeks, a subset of the larger CORE program that performs outreach and trash pickup for people living alongside the counties Creeks. To learn more, I had a conversation with John Steere, who started the program after noticing high volumes of trash resulting from the homeless encampments in the creeks around Contra Costa County. Steere saw an opportunity to have the CORE program outreach to homeless tent encampments and tackle trash cleanup in the riparian corridor while also providing essential services for hard-to-reach populations of people. CORE Creeks empowers people experiencing homelessness. The team provides the individuals living in the riparian corridor trash bags to clean up their encampment. This in turn gives people experiencing homelessness a sense of ownership and purpose in the context of the larger community. Members of the CORE Creeks team also build relationships with the individuals they encounter, which allows the individuals in the creeks to feel a sense of dignity and value. According to John, the primary goal of the CORE Creeks team is to meet with individuals—in some cases in their encampments—and build relationships (Steere).

Another benefit of the program is that the trash collected from the encampments goes towards the county's "Direct Discharge Plan," this is part of their permit for their Municipal

Water Act requirements. The county receives 15% credits for their total maximum daily load (TMDL) for trash. The contribution towards the TMDL also helps incentivize the county to pay for part of the CORE Creeks team. Whenever the CORE Creeks team goes out, they work with homeless individuals to pick up trash in 3-gallon bags. The county then weighs the trash and tabulates how many gallons of trash were picked up by people experiencing homelessness. At the end of the fiscal year, members from the count calculate the number of 40-gallon bags collected (Steere).

According to John Steere, “we get the water quality benefits and they get vouchers for food and lifts to hospitals, grocery stores, etc.” (Steere). The CORE Creeks teams connect with members from homeless encampments every week to ensure needs are met. Even if the tent encampment is tagged for abatement, the CORE Creeks team comes in and helps individuals remove their things from the creek corridor. The CORE Creeks team is incorporated in the county’s goal to reduce the trash in high trash areas (Steere).

Conclusion:

As an introduction to some of the programs dealing with the intersection of water quality and tent encampments in the riparian corridor, my research was successful. Throughout my research, I gained insight into some of how environmentalists in Sacramento, Santa Cruz, and San Pablo are working with people experiencing homelessness to ensure that they are not criminalized, but the water and riparian habitat in the areas with encampments remain protected. As stated again and again by the individuals I interviewed to the individuals speaking at the IRWM Summit, the solution to water quality is tied to the continuation of homelessness. Without accessible programs e.g., employment assistance, low-income housing, mental health, social

services that assist people at risk of experiencing homelessness, the number of unsheltered individuals will continue to rise and more people will seek refuge in the creek corridor. The programs that appear to have the largest impact on both a social level and a water quality level are those that incorporate the people experiencing homelessness into the program model. Where the city receives help collecting trash and the people experiencing homelessness receive essential services in return for collecting trash and maintaining the tent encampments.

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Appendix A

INTERVIEW QUESTIONS

1. Describe the City's/organizations program(s). How did it begin?
2. What is your role?
3. From your perspective, what is working in the program and where are there gaps?
4. Do you think creek areas are adequately addressed as part of the City/organizations programs?
5. New innovative programs? What hurdles? Have you been able to resolve them?
6. Are there issues/hurdles that are specific to creeks/waterways? How does the City address these?
7. How does your organization/program collect data?
8. What is the collected data used for?
9. Does your organization collaborate with any government agencies, city programs or other organizations? If so, who?
10. Has this collaboration been helpful? How?
11. Has your program been affected by the pandemic? If so, how?
12. Have you noticed any trends in the presence of encampments in creeks?
13. What constraints exist within your program?
14. Would you change anything about your program? If so, what would you change and why?
15. What has been the biggest insight since the beginning of your involvement with the program?