

Apprenticeship Winter 2023 Quarter Completion Report: Marin City Historical Background and Soil & Tap Water Testing Project Proposal

Historical Background

Marin City, California, is a small unincorporated community located in Marin County, just north of San Francisco. The history of Marin City is marked by significant social, political, and economic challenges, particularly for its African American residents. Many African Americans migrated to Marin City to work in nearby shipyards during World War II. This significantly increased the African American population and created a tight-knit community (Image 1). Despite the contributions of African Americans to the local economy, Marin City was subject to redlining and other forms of discrimination, particularly in housing. This led to overcrowding, inadequate housing, and limited access to services and resources.



Image 1: Black and white photograph of new housing construction at Marin City. The photograph was taken in the early morning and shows rows of worker housing for the Marinship shipyard in southern Marin. There are tree-lined hills in the background and an as-yet undeveloped area in the foreground. There are two tractor-like

vehicles on the lower left. Written in pencil on reverse: " Marin City - WWII Housing Construction (Marin History Museum, 1942).

After the end of World War II, Marin City experienced a period of economic decline, as many of the shipyard jobs disappeared. This was compounded by a lack of investment and disinvestment in the community, leading to a decline in the quality of life for residents, including environmental injustice issues. So-called environmental issues such as exposure to pollutants and toxins, lack of access to green space and healthy food, and inadequate infrastructure and services (Burd-Sharps & Lewis, 2012). These issues are often the result of systemic racism and discrimination, as well as a lack of political representation and investment in the community (Crispell, 2015).

The current initiatives and actions taken to combat these issues are through community-based organizations and advocacy groups working together to raise awareness and push for policy changes that address these problems. One of the community-based non-profit organizations is the Marin City Climate Resilience and Health Justice (MCCRHJ). Some of the specific initiatives that the organization is working on include enhancing the ability of Marin City residents to adapt and recover from the impacts of climate change, such as extreme weather events, sea level rise, and other climate-related hazards. The organization also advocates for policies and programs that reduce exposure to environmental toxins and pollutants and promote environmental health and equity.

Geography

Marin City has a bowl-like shape, and due to the presence of Highway 101, stormwater is prevented from flowing out of the watershed to the Bay and contributes to adding stormwater runoff within Marin City (Marin City Climate Resilience and Health Justice, 2022), thus making Marin City vulnerable to pollution in sediments and tap water. The community's only access road, Donohue Street, is prone to flooding, making it a potential hotspot for soil contamination (Image 2). This project aims to assist the community with developing a broad overlook of the current environmental quality of soil and water. The deliverable will be presented to the community by MCCRHJ to start a conversation on potential risks associated with pollution exposure from soil and/or waters and public health. The project report will also be a tool for MCCRHJ to use in policy, project advocacy, and future grant application.



Image 2: Topography of Marin City to highlight where the runoff accumulates (Marin City Climate Resilience and Health Justice, 2022).

Positionality

In the interest of self-awareness, I recognize my limited connection to the community and my differing cultural and social background

prior to presenting my findings. My only association with Marin City is through a 6-month apprenticeship (unpaid) program with the Marin City Climate Resilience and Health Justice (MCCRHJ). As a college graduate researcher who is not a resident of Marin City, this research will be conducted through an existing collaboration between the Earth and Planetary Department at UC Davis and the community facilitated by MCCRHJ. Therefore, I will present these findings as one potential interpretation under the guidance of Dr. Griffin to ensure a just and ethical report. I recognize the importance of approaching the findings with a critical lens and engaging with community members to ensure that the results fully and accurately represent their experiences and needs.

Soil and Tap Water Testing in Marin City

The purpose of this project is to collect soil and water samples that accurately reflect the environmental condition of the Marin City community in an efficient manner. Through this project, we seek to provide a comprehensive understanding of the presence and distribution of contaminants within the city. By providing a detailed assessment of soil and water conditions, we can enhance the community's ability to manage and mitigate potential environmental risks and support future development.

Method and Procedures

This research project aims to examine the environmental quality of soil and water in Marin City, focusing on identifying potential contamination. To achieve this, I will conduct a preliminary analysis of



community vulnerability using archival data from public sources, prior assessments, and university libraries. This will be followed by collecting and analyzing soil and water samples from identified locations of concern. Below are the steps that will be taken:

Preliminary Analysis: The first step in this research will be conducting a preliminary analysis of community vulnerability using archival data. The archival data includes records from county and state data management systems and assessment reports prepared by environmental consulting companies. This analysis will involve reviewing all previous environmental assessments undertaken in the city to examine their testing results on soil and water. The aim is to identify potential areas of contamination, determine the best locations for sample collection, and prioritize contaminants of concern.

Spatial Analysis: The next step will be to organize the initial research findings and input them into ArcGIS Pro to analyze pollution vulnerability spatially. This analysis will prepare a Sampling and Analysis Plan which describes the sampling locations, numbers, and types of samples to be collected, as well as the quality control requirements of the project.

Sample Collection: After identifying potential sample locations, soil and water samples will be collected and sent to certified commercial environmental laboratories and the UC Davis Analytical lab for analysis. Dr. Griffin and I will collect the samples using sampling techniques and tools in accordance with sampling protocols established by the U.S. Environmental Protection Agency (EPA) to ensure reliability. Samples will be collected from different locations with the partnership of MCCRHJ and the residents' permission.

Laboratory Analysis: The laboratory analysis will provide information on the composition of soil and water, including any contaminants present. The analysis will be conducted using EPA-established methods and protocols, and the results will be interpreted relative to state and federal criteria for each respective contaminant of concern.

Data Interpretation and Presentation: Finally, the data obtained from the laboratory will be compared to state and federal recommended sediment/water chemistry screening guidelines. The findings will be delivered in a complete report to MCCRHJ and presented to the community if desired.



Timeline of Proposed Activities

Task	Winter 2023	Spring 2023	Summer 2023	Fall 2023	Winter 2024	Spring 2024
Preliminary Analysis						
Background assessment						
Site visits						
Develop sampling plan						
Spatial Analysis						
Potential pollution sites						
Determine sampling sites						
Sample Collection						
On-site tap water and soil collection						
Laboratory Analysis						
Aggregate and analyze sample data						
Data Interpretation and Presentation						
Prepare written report						
Submit report(s) to MCCRHJ and community presentation						

Completion of Phase I Background Assessment Report

The first step of this research project involves conducting a preliminary analysis of community vulnerability, which is accomplished by reviewing archival data. Current data are sourced from the county and state data management systems and environmental consulting companies' assessment reports. The analysis primarily focuses on examining previous environmental assessments conducted within the city, with particular attention paid to testing results on soil and water. By doing so, potential areas of contamination will be identified, optimal locations for sample collection will be determined, and contaminants of concern will be prioritized during Spring 2023 quarter. The subsequent step is to spatially analyze the initial research findings by inputting them into ArcGIS Pro. This analysis will facilitate the development of a Sampling and Analysis Plan, which will detail the sampling locations, types, and numbers of samples to be collected, as well as the quality control requirements of the project.

To date, 48 contamination sites have been identified and mapped in Marin City and neighboring Mill Valley and Sausalito communities. These sites include 7 cleanup program sites, 1 closed military base, 1 evaluation site, 25 Leaking Underground Storage Tank (LUST) cleanup sites, 2 military cleanup sites, 7 permitted underground storage tanks (USTs), 2 single-walled USTs, 1 standardized site, and 1 voluntary agreement site (Appendix A). Appendix A provides detailed information on each site, including the contaminant of concern, pollution source, and remediation methods. 48 contamination sites are mapped using ArcGIS Pro (Map 1).

Moreover, based on EPA standards, 19 industries and previously cited USTs in environmental reports are identified as potential hazardous waste generators. Appendix B identifies 1 aboveground storage tank, 1 construction, demolition, and renovation business, 3 dry cleaning businesses, 2 equipment repair businesses, 1 furniture manufacturing and refinishing business, 1 laboratory, 2 photo processing businesses, 2 printing businesses, 2 USTs, and 3 vehicle maintenance businesses located in Marin City and its neighboring Mill Valley and Sausalito communities. A portion of these sites is mapped in Map 1.

Furthermore, in response to the community's concern about pollution runoff from Highway 101 and the possibility of contaminant sedimentation from nearby industries during flooding in Marin City, FEMA's 100- and 500-year flood zones are incorporated into the map for spatial analysis.



References

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