



PROJECT REPORT

## **Strengthening the Caño3.7 Volunteer Program**

An Interactive Qualifying Project submitted to the faculty of Worcester Polytechnic Institute in partial fulfillment of the requirements for the Degree of Bachelor of Science

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## Abstract

The goal of this project was to identify weaknesses in the Caño3.7 volunteer program and address them. To realize this goal, we first met with the heads of departments within the organization to identify their needs. Following this, we met with third party volunteer management system (VMS) vendors while simultaneously developing a custom solution focused on Caño3.7's unique requirements. This project resulted in the further development of a custom solution that can generate project summaries and display volunteer analytics in tandem with the creation of an open-source version of the custom VMS that can be accessed by anyone, provided with sufficient documentation for further customization.

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Caño3.7 – Organization Sponsor

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Scott Jiusto - Advisor

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## Authorship

This report was done collaboratively by all team members. The collaborative writing process that the team used during the project was the following. A section was assigned to a member of the team to make the first draft. Then another member of the group reviewed and edited the first draft and at the end the complete team revised each section.

Section of the report	Frist Draft	Revision and edited	Final revision
<b>Executive Summary</b>	Hannah, Gabriel	Kush, Daniel	All
<b>Chapter 1: Introduction</b>	Kush, Hannah, Julie, Daniel, Gabriel	All	All
<b>Chapter 2: Background</b>			
<b>History of the Community Settlements in San Juan, PR</b>	Hannah	Julie	All
<b>Organization Infrastructure</b>	Gabriel, Julie	Hannah	All
<b>Overview of General Volunteer Management</b>	Julie	Daniel	All
<b>Accounting in Volunteer Operation</b>	Daniel	Kush	All
<b>Different volunteer management systems</b>	Gabriel	Julie, Hannah	All
<b>Chapter 3: Methodology</b>			
<b>Objective 1: Assess the current state of their volunteer program</b>	Kush, Julie	Hannah	All
<b>Objective 2: Identified a suitable VMS (Volunteer Management System) for the Sponsors, Including the Development of a Volunteer Management Dashboard</b>	Gabriel, Daniel	Julie, Hannah	All
<b>Objective 3: Implement a VMS for the organization.</b>	Julie	Kush,	All
<b>Objective 4: Formulate a lasting connection between WPI and the Sponsor</b>	Hannah	Gabriel	All
<b>Chapter 4: Findings</b>	Daniel, Kush	Julie, Gabriel	All
<b>Chapter 5: Conclusion</b>	Gabriel, Kush	Hannah	All
<b>Chapter 6: Appendix</b>	All	All	All

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## Executive Summary

Situated within the San Juan area is the San Juan Bay Estuary, a canal stretching 3.75 miles long known as the Caño Martín Peña. This tidal channel runs east from San Juan Bay to the Laguna San Jose, where several communities are situated. These communities are informal settlements, meaning they have no legal claim to the land they inhabit. There are groups of housing units constructed on the land that is not in compliance with the city's current housing and building regulations. The Caño Martín Peña is a prime example of an informal settlement where around 26,000 people reside primarily without permit, creating the need for third-party intervention.

These closely populated areas create many issues because the community lacks infrastructure, with the most significant inadequacy being the region's little to no drainage. The flooding destroys the homes in the area, houses that are already in poor condition. Most of the houses lack a proper sewage system leading to unsanitary conditions. Different organizations have attempted to help solve these issues, but more measures need to be taken.

To alleviate the conditions and issues surrounding the caño or channel, a community-based organization called Caño3.7 was founded and comprises three different entities: ENLACE, G-8, and Community Land Trust. The team worked with ENLACE and more specifically under the liaison Kimberley Pérez Rodríguez. The main goal of this organization is to understand the community's needs and to make sure the people in the communities have a voice in the projects to improve the standard of living. These three organizations have been working together to implement and create new projects that help the community at the Caño Martín Peña. They rely on volunteers to achieve the goals of each project. Volunteers vary from project to project, and the organization runs more than one project concurrently, making the management and tracking of all volunteers an arduous task. The organization's current solution to volunteer management includes a Google spreadsheet populated by the information inputted by volunteers into Google forms. The problem with this method is that much manual work needs to be done to recruit volunteers, quantify the volunteer hours for use in grant proposals, schedule tasks to volunteers, and generally organize the work done by the 1000 volunteers annually.

This project was done to help manage and strengthen the volunteer program in the Caño Martín Peña area by providing Caño3.7 with an effective software solution to improve the current state of their volunteer management so that they can focus on helping those in need. This was done

by implanting a new custom solution called the Volunteer Management Dashboard within the organization.

The project was completed through four main objectives. In objective one, the team assessed the current state of the volunteer program and analyzed the inner workings of the organization. This was done in three phases. In phase one the team researched the work ENLACE does and completed this before arrival in Puerto Rico. In phase two, the team met with managers of key department within the organization to understand the volunteer process, how the information is processed, and what they were looking for in the VMS. In phase three, the team identified areas that needed improvement within the system.

In objective two, a suitable VMS was identified for ENLACE, including the development of an internal solution. A comprehensive list of systems that satisfied ENLACE's requirements and had the information Kimberly requested was generated. The team then narrowed down the list of systems that met the given requirements and reached out to the VMS companies. A demo was held with a VMS by the name of *BetterImpact* and the findings were presented to Kimberly. At this point, the team began development of an internal VMS using a platform called *Retool* as it was concluded that this could be a more cost-effective option and could fulfill most of the essential needs of the VMS.

In objective three, the team implemented a VMS for ENLACE. This was done by developing a custom solution. This custom solution is an open-source website that can track the number of volunteers, identify the volunteers with the most hours, produce graphs of the hours per project and volunteers per month, and can validate a volunteer's information to ensure that all information is correct. In addition to fulfilling the needed requirements, this custom solution was also appealing because of its low cost of \$10 per month for an administrator.

In a broader sense, objective four was to formulate a lasting relationship with ENLACE and was carried out through the entirety of the project. The team ensured that the connection created with ENLACE was strong and aimed to be on the same page as Kimberly throughout all steps of the project. By doing so, new project ideas were generated for future IQP students to complete with ENLACE.

By researching VMSs and custom options as well as analyzing the information gathered at the project site the team developed the following deliverables. The two main deliverables being the Commercial VMS option and the volunteer management dashboard.

- Commercial VMS
- Volunteer Management Dashboard
- Selecting a Commercial VMS for Non-Profit Organizations: A Guideline
- Selecting a Commercial VMS for Nonprofit Organizations: A Report ENLACE
- Google Sheets as a VMS Component
- How to use the Volunteer Dashboard
- Caño Information Video

The third-party VMS suggested by the team comes from the company *BetterImpact*. The software can manipulate and show the data in various types of reports that the manager can select. The VMS is capable of being used in a Spanish based environment with is important for ENLACE. For the number of volunteers Caño3.7 has on a regular year the cost of utilizing *BetterImpact* would be around \$2500. It was concluded that *BetterImpact* is not the ideal solution for the Caño3.7 because of the high price and the additional features that are not essential for ENLACE.

A Volunteer Management Dashboard that best fits the needs of ENLACE was developed. A software by the name of *Retool* was utilized for this. The *Retool* software has a cost of \$120 dollars per year per administrator. This is a considerably lower cost compared to other VMS available in the market. During the process of developing the internal VMS, it was found that formatting the data was especially challenging regarding keeping track of the right date. Creating an in-house option for an organization can be difficult without first understanding the needs of the organization.

If this work was carried out in the future, a few factors could be added to the Volunteer Management Dashboard option to better suit the needs of the sponsor. The action of bulk input of volunteers for one task could be added. This will allow the manager to only do one submission to the VMS that will fill in the information and times of all members of a group of volunteers that did the same work. This will be easier to compute and upload all the volunteer data. Also, a calendar with events that a department manager can add without being



a creator would be a good addition to the software to keep organized. Using SQL as the backend instead of Google sheets would also increase efficiency when carrying out the process, because the form could be implemented directly in *Retool* to consolidate the data collecting process.

It is advised to implement an email communication channel that can be run on the *Retool* page. More specifically, allowing the manager to write emails in the VMS and send them to the volunteers on the database. Also, it is recommended to incorporate a WhatsApp communication channel within *Retool* to allow the organization to manage and keep contact with volunteer

## Chapter 1 Introduction

Home to some of the most picturesque beaches, San Juan is the most populated city in Puerto Rico, with about 2 million people (United States Census Bureau, 2020). Being the biggest city on the island, San Juan was one of the most dynamic and competitive economies in Latin America and the Caribbean until more recently when the population dipped. In earlier years, the Puerto Rican economy was dominated by sugar production, but has recently shifted to pharmaceutical brewing, oil refining, electronic production and food and clothing production. This economic shift and lack of jobs to fill the growing manufacturing industry is one of the major problems Puerto Rico is facing (United States Census Bureau, 2020). The economic struggle of San Juan invites the opportunity to reinvent the city.

Situated within the San Juan area is the San Juan Bay Estuary, a canal stretching 3.75 miles long known as the Caño Martín Peña (Figure 1, see below). This tidal channel runs east from San Juan Bay to the Laguna San José, where several communities are situated. These communities are informal settlements, meaning they have no legal claim to the land they inhabit. There are groups of housing units constructed on the land that is not in compliance with the city's current housing and building regulations. The existence of these informal settlements indicates the presence of socioeconomic problems in the area, with two prominent issues being Puerto Rico's underpopulation and lack of jobs. These issues have been around since the industrialization period, bringing many new people to the area, forcing this broad inhabitation. The Caño Martín Peña is a prime example of an informal settlement where around 26,000 people reside primarily without permit, creating the need for third-party intervention. (Organization for Economic Co-operation and Development, 2001). It's a place where people are trying to take control of their own destiny by working together to fix their problems.

These closely populated areas create many issues because the community lacks infrastructure, with the most significant inadequacy being the region's little to no drainage. Puerto Rico has a tropical climate and widespread rain so with inadequate drainage, flooding is expected. In 2012, 70% of residents reported flooding which is significantly greater than the previously reported 39% in 2002 that experienced flooding (Ecology Presentation, Estrella). The flooding destroys the homes in the area, houses that are already in poor condition. Another aspect of poor drainage is plumbing. The lack of a proper sewage system and the overcrowded housing of the Caño Martín Peña leads to disease. Most of the houses lack a proper sewage system leading to

unsanitary conditions. Different organizations have attempted to help solve these issues, but more measures need to be taken (Font, n.d.).

To alleviate the conditions and issues surrounding the caño or channel, a community-based organization called Caño3.7 was founded and comprises three different entities: ENLACE, G-8, and Community Land Trust (Caño3.7, *n.d.*). ENLACE is the umbrella of the governmental organization for all the projects held at the caño to help the community. The entity G-8 is a non-governmental organization that focuses on grouping and strengthening the link between the eight communities present in the caño. The main goal of this organization is to understand the community's needs and to make sure the people in the communities have a voice in the projects to improve the standard of living. The last organization present at the caño is the Community Land Trust (CLT), which focuses on creating affordable houses for the community. This needs to be done because of the informal settlements present in the area. They need to formalize their situation to become owners of the land where they live. These three organizations have been working together to implement and create new projects that help the community at the Caño Martín Peña. They rely on volunteers to achieve the goals of each project. The projects that are done along the caño range from the community's education to the dredging of the canal (Fideicomiso de la Tierra Caño Martín Peña, *n.d.*). They also have projects with the CLT that require volunteers with a high level of expertise, such as lawyers, on formalizing the settlements. Volunteers vary from project to project, and the organization runs more than one project concurrently, making the management and tracking of all volunteers an arduous task. The government is the main source of funding for the projects, but to seek grants, another form of funding, they need to quantify the budget of the project and the volunteer time. This is difficult because of the variety of tasks done by volunteers. The organization's previous solution to volunteer management included a Google spreadsheet populated by the information inputted by volunteers into Google forms (Community Land Trust Caño Martín Peña, 2011).

The problem with this method was that much manual work needed to be done to recruit volunteers, quantify the volunteer hours for use in grant proposals, schedule tasks to volunteers, and generally organize the work done by the 1000 volunteers annually. These factors mentioned above made the situation a challenge to manage, so improving the current system helped save the organizations a lot of time and in turn, helped the communities in need. This was achieved by

implementing a Volunteer Management System (VMS), which automated many previously mentioned tasks (Interview, Rodriguez).

This project was intended to help manage and strengthen the volunteer program in the Caño Martín Peña area by providing Caño3.7 with an effective software solution to improve their volunteer program so that they can focus on helping those in need. This was done mainly by implanting a new or improved VMS within the organization. The team looked at the current state of the volunteer program and how the organization operates. Using all the research gathered, the team then identified a suitable volunteer management system for the organization to use. After choosing the volunteer management system, the system was implemented into the organization to optimize the efficiency of managing volunteers. During this operation, the team also formulated relationships with the sponsors to optimize the possibility of future projects with the sponsors.

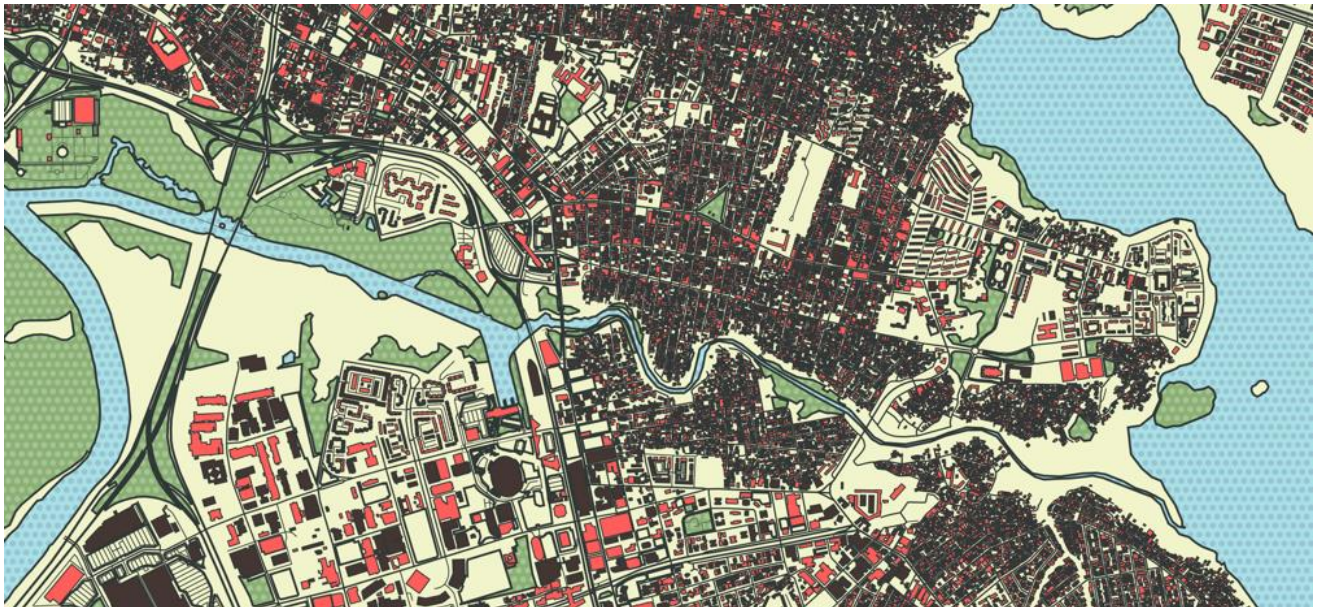


Figure 1 Communities Surrounding the Caño Martin Peña (Shah, 2021)

## Chapter 2 Background

The following background shows the research we have conducted that aided our methodology. First, we investigated the history of the Caño Martin Peña to understand the roots of the community that determined what Caño3.7 focused on. Then we introduced the infrastructure of Caño3.7 which consisted of three organizations leading projects guided by the community at the caño. This helped us understand the dynamic of the organization and the different projects that improved the quality of life for the community. To understand how the volunteers worked at the Caño3.7 the team researched about the general guidelines of managing volunteers. Following this, we went over the accounting part of running a volunteer program. We analyze how the time of the volunteers is valued depending on the work they do because we implemented this notion in the VMS. Finally, we go over the different VMSs found and the services they provided.

### 2.1 History of the Community Settlements in San Juan, PR

In the 1930s, after hurricanes San Felipe and San Cyprian, the sugar cane industry collapsed in the 1940s, crashing the stock market. This caused an influx of migration to the cities like San Juan. In 1945, the Puerto Rico Eradication of Slums Act relocated many low-income families to other areas. Left with nowhere else to go, many low-income families created informal settlements along the caño (Community Land Trust Caño Martin Peña, 2011). The migration influx further increased during the 1950s with the industrial development in San Juan creating more job opportunities. (Estrella, 2021)



Figure 2 Flooding around the Caño (ENLACE, 2010)

The low standard of living in the area presented a significant flooding issue because the funds for proper stormwater drainage system were not available. Essentially, whenever it rained, the caño would flood (Letts, 2010). Figure 2 shows an image of what the flooded caño looked like in 2010. In addition to the polluted and flood-prone river channel, the lack of a sanitary sewage system in over 3000

structures resulted in (and still results in today) sewage flowing directly into the caño (Organization for Economic Co-operation and Development, 2001). Frequently, flooding occurs due to this blocked caño, and contaminated water affects 70 percent of the communities in 2012. Over the years, the caño became filled with debris and waste (Algoed & Hernández, 2019). The government tried to fix the caño in the 1980s by dredging the western portion of the caño. However, this removed the communities surrounding the caño and gentrified the area.

## 2.2 Organization Infrastructure

Today, approximately 25,000 people are making up eight communities situated around the caño. Fearful of displacement, these eight communities became highly attached to the land and came together to create what is now known as the Caño Martín Peña Land Trust (CLT) between 2002-2004. This was created to maintain the land and introduce some formality to the building structures with the idea that the land can never be sold privately, thus protecting the communities living there for years to come (Algoed & Hernández, 2019). By definition, a community land trust is a non-profit organization that creates affordable houses for low-income families (Fideicomiso de la Tierra, n.d.). Allowing the people to own the land lets them to make developments in their community and improve living conditions. This is one of the primary goals of the land trust.

In the early 2000s, 1,000 residents took part in an action-reflection process to establish the land trust (Community Land Trust Caño Martín Peña, 2011). Residents wanted to avoid gentrification once the canal was dredged, which makes the land more attractive to developers. The CLT would generate income through different methods, primarily renting properties. Bringing in revenue would decrease the need for money from large corporations (Fideicomiso de la Tierra, n.d.). As the area improves, the value of the land will increase, so when a family sells a house, the profits will partially go to the family and the rest to the CLT (“Caño Martín Peña community Land Trust”, 2018).

Three central organizations represent the public, the private, and the community that restores the canal. "In 2004, the law 489 was passed creating two bodies that would implement the plans that were decided upon: the ENLACE Corporation (the administrative body) and the Caño Martín Peña Community Land Trust (CMP-CLT)" or the Fideicomiso (Fideicomiso de la Tierra Caño Martín Peña, n.d.). The Law stated its purpose is "to give priority attention to the environmental restoration of the Martín Peña Canal and to rehabilitate and revitalize the

communities along its north and south banks" and "promote a healthy relationship between the natural environment and its surrounding city and communities, with a vision of integrated development based on community empowerment." (Sheffield, 2011). The ENLACE organization is currently part of the government of Puerto Rico. Its mission is to implement a public policy that will lead to the rehabilitation of the caño and the surrounding local communities. ENLACE implemented an engineering project that focused on the dredging of the caño. To avoid becoming a bureaucratic apparatus, ENLACE works alongside the Fideicomiso, a private non-profit organization focused on administering and managing the land for the benefit of the residents. Another key player, G-8, is non-profit organization, created in the 2000s, based on the linking of the eight communities that are present in the Caño: Barrio Obrero Oeste, Barrio Obrero Marina, Barrio Obrero San Ciprian, Buena Vista Santurce, Israel-Bitumul, Las Monjas, Buena Vista Hato Rey, and Parada 27 (Fideicomiso de la Tierra, n.d.). These eight communities are shown below on the map in Figure 3. G-8 focuses on promoting the interests and participation of these communities in the development plans around the caño. The name G8 came to be because it oversees the eight communities in the caño, each with equal importance at the organization. A graphic of the three organizations under Caño3.7 can be seen in Figure 4. ("Corporación del Proyecto ENLACE del Caño Martín Peña Informe de Estatus, Planes y Logros de Unidades Administrativas", 2020)

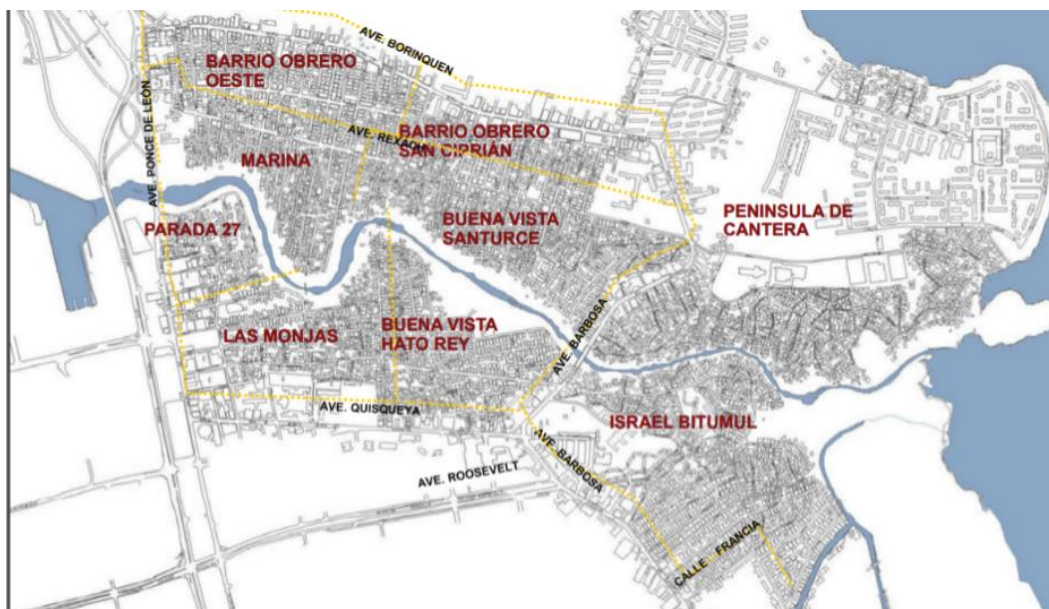


Figure 3 Map of the communities around the Caño Martín Peña (ENLACE, 2010)

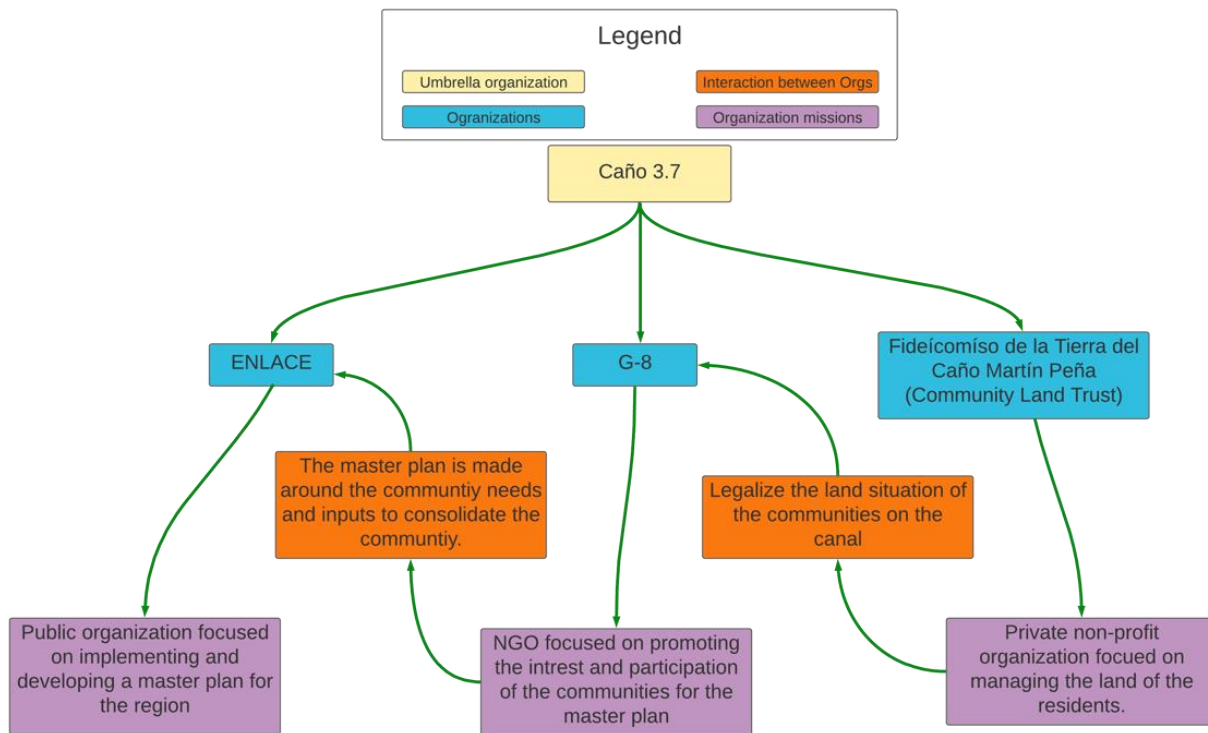


Figure 4 Caño3.7 Infrastructure (Oficina de Gerencia y Presupuesto Gobierno de Puerto Rico, n.d.)

For these organizations to accomplish their goals, volunteers are recruited. Prior to the project, a Google spreadsheet is utilized to keep track of the volunteers as well as all the tasks. This method presented problems with poor organization, and so a volunteer management system is being requested for better organization to optimize the number of volunteers to help the land trust on their various projects. Less time will be spent organizing volunteers with better organization, and more time can be spent on the tasks at hand. In addition, this will also help the Sponsor quantify volunteer work to better budget their efforts and help them get grants. (Oficina de Gerencia y Presupuesto Gobierno de Puerto Rico, n.d).

### 2.3 Overview of General Volunteer Management

The Caño Martin Peña is a large-scale project with 3-organizations present doing large varieties of projects at the Caño. They have many types of volunteers. First, they have volunteers that are called "Fijos", that follow a strict chain of order and work on the project daily. Second are social change volunteers who reach out to the lawyers and students that have expertise in areas that they need help in a project. They also have volunteers that act as community leaders. They fall into this



category because they know what the community needs and will engage in the new projects in the caño area. Lastly, they have volunteers that rotate through the different projects they have running through the year. The upper management of the volunteers at the Caño Martin Peña need to have the capacity to manage all types of volunteers and be able to have different types of projects running at the same time.

## 2.4 Accounting in Volunteer Operation

Accounting is a difficult and important task for non-profit organizations. According to Salamon, Sokolowski & Haddock (2011), most non-profit organizations, or NPO for short, rely heavily on volunteer work because they are typically low on capital. NPOs receive most of their limited capital from grants and donors. Applying for and receiving grants is where accounting becomes critical for NPO. To receive these grants, NPOs must show legitimacy through proper annual reports, which quantify their volunteers' work and contributions. Without thorough annual reports, third-party contributors may be afraid to donate because there is no clear proof of that NPO legitimacy, and third-party funding is essential to an NPO success.

One of the key elements of non-profit accounting is the ability to accurately value volunteers' time and contributions. The first is whether to focus on the inputs or outputs and how quantifying their values may vary. The main inputs in volunteer work are labor time as well as tangible goods, and the outputs of volunteer work are the resulting benefits of the work (Salamon, Sokolowski & Haddock, 2011). Quantifying the input of goods is not very complex because the specific goods that were utilized have a real market value. The true challenge comes with assigning value to volunteers' donated time and the outputs of their work because they do not have distinct market values.

To value these inputs and outputs more accurately, organizations use observed or declared market proxies. Observed market proxies look at analogous market services or goods that can be considered close substitutes for the non-market goods or services that were utilized (Salamon, Sokolowski & Haddock, 2011). Declared market proxies look to volunteers, their managers, or other stakeholders to share what they believe their work is worth. This concept of observed and declared market proxies are utilized in three main valuation approaches. These approaches are the replacement cost approach, the opportunity cost approach, and the societal benefits approach. The opportunity cost approach looks less at market values and focuses on the concept of leisure time

(Brudney, J. L., 2014). Leisure time is a person's time away from work or free time. The value of this leisure time can vary greatly because it is based on the person's occupation. For example, a lawyer's leisure time is typically more valuable than a fast-food worker's leisure time (Tooley & Hooks, 2020). For the opportunity cost approach, organizations look at how much a volunteer would have made working their normal job to quantify their volunteer work. The last approach, the societal benefits approach, looks to quantify volunteer work based on its societal impact. The observed societal benefits evaluation looks at a similar project to the one that was completed by the volunteers and bases the value on that. The declared value comes from asking the volunteers, their managers, and the beneficiaries what they would have paid for the goods (Salamon, Sokolowski & Haddock, 2011). See Figure 5 for further breakdown.

Valuation strategy	Focus of valuation	Basis of valuation	
		1. Observed	2. Declared
A. Replacement cost	Inputs	Replacement wage	Supervisor judgment
B. Opportunity cost	Inputs	Alternative-employment wage	Volunteer judgment
C. Societal benefits	Outputs	Cost of counterpart goods or services	Beneficiary judgment

Figure 5 Valuation Strategies (Salamon, Sokolowski & Haddock, 2011)

## 2.5 Different volunteer management systems

Volunteer Management Systems or VMS are software packages that are meant to streamline the volunteer management process. They assist the increase productivity of the organization by providing coordination of different tasks to volunteers and the ability to distribute these tasks to volunteers. There are qualities that make a VMS a good system. According to A Survey on Volunteer Management Systems (n.d.), a VMS should be able to control workflow. This includes the ability to assign a task that fits a volunteer depending on the volunteer's profile as well as the ability to assign tasks easily and quickly because volunteer work is not always fully planned. Unexpected things can happen, and the management system should be able to implement the changes efficiently. A good VMS should also be able to let the volunteers choose their tasks. This is to keep the volunteer happy, so that they continue to volunteer especially if they are unpaid volunteers. For the same reason, a VMS should also have a way the volunteers can give feedback. Another quality of a good VMS is that it should have a way that the stakeholders can assess the work done and the volunteers. This is to make sure the program is running efficiently for the long term. It allows insight into the program and allows changes can be made to further improve the

volunteer management. A good VMS should also be continuously evolving as the volunteers themselves grow. Returning volunteers should eventually be given a different perspective like adding achievements or a different view of the tasks. The reasons are like the reasons for having the ability to give feedback. The VMSs in this section follow these standards to a degree as well as Caño3.7's requirements.

Those requirements are as follows:

1. Be able to register volunteers with personal information
  - a. Name
  - b. Phone Number
  - c. Email
  - d. Gender
  - e. Address
  - f. Profession
2. Take the form of a cloud-based software / SaaS (Software as a Service)
3. Have technical support
4. Ability to schedule events
5. Be in both English and Spanish
6. Generate statistical reports

Table 1 below shows a variety of potential solutions that meet the needs outlined above.

Table 1 Different VMS (see Appendix for larger view)

VMS	cost	Volunteer registration capacity	Platform type	Technical support	Allows admins to schedule events	Stores info	Language change	Statistical report
Volunteer hub =	Plus Plan: \$150 / month Pro Plan: \$269 / month Enterprise: custom	Plus Plan: up to 1000 Pro Plan: up to 2000 Enterprise: 2500+	Cloud	yes	yes	Cloud file storage: \$348/year	Kiosk app: can change language	yes
Volgistics =	depends on number of volunteers, archives, operators, and added features	No limit	Web	yes	yes	Yes, but pay extra for VicDocs (more options)	Google translate	yes
Sumac =	starter: \$35/month standard: \$75/month growing: \$150 / month established: \$250 / month world changer: contact	750 reports 1500 reports 4500 reports 20,000 reports 5 million reports	Online (ANW) database	yes	\$85 / month (add on)	5 Gig cloud 5 Gig cloud 10 Gig cloud 20 Gig cloud 50 Gig cloud	yes	yes
Helper Helper =			Software - web	yes	yes			yes
Hands On Connect =			Cloud	yes		Has spanning backup		yes
Samaritan =	Start at \$4750 / year	unlimited	Cloud	yes	yes		yes	yes
YourVolunteers =	Free: \$0/month – with ads Premium: \$20 / month	1000 per focus 2,000 per focus	Cloud	no	yes			yes
Volunter Impact (better Impact)	Depends on volunteers \$240 / year – 50 volunteers \$876 / year – 500 volunteers \$4344 / year – 5,000 volunteers	unlimited	Cloud	yes	yes	yes	yes	yes
Volunteermatters	Growing plan: \$99 / month Professional plan: \$249/month Enterprise plan: custom	500 volunteers 1500 volunteers 2500 volunteers		yes	yes	yes		yes

Some specificities for each VMS can be found in the Appendix 5.2.

## Chapter 3 Methodology

The project was intended to help manage and strengthen the volunteer program in the Caño Martín Peña area by leaving the Sponsor with a modern and effective volunteer management solution so that they can focus on helping the community.

To accomplish this goal, we pursued the following objectives:

1. Assess the current state of their volunteer program
2. Identified a suitable VMS (Volunteer Management System) for the Sponsors, including the development of an internal solution
3. Implemented the chosen solution for the organization.
4. Discussed future programs to build a lasting connection between WPI and the Sponsor.

### 3.1 Objective 1: Assess the current state of their volunteer program

For this objective, we analyzed the inner workings of the organization. The purpose of this objective is to develop an understanding of their current program. We did this in three phases. The first phase, researching the sponsors and the work they do. This phase was primarily completed before arrival in Puerto Rico, but the team worked on this during the first two weeks on the island, confirming the information we gathered with the employees. More research was conducted about the different departments in ENLACE through the department presentations. We met with all six departments. The second phase was conducting interviews with the managers of the departments to understand the volunteer process, how the information is processed, and what they want in the VMS. We completed this phase by conducting key informant interviews. The third phase was to identify any areas that need improvement or refinement that will be addressed later in the project.

This objective was crucial to the project so that we knew where the organization was in terms of managing their volunteers and their overall program. With help of Kimberly the liaison, we met with the different departments in ENLACE. We met with the Oficina de Participación Ciudadana y Desarrollo Social [office of citizen participation], Área de Administración y Finanzas [administration and finances area], Área de Planificación y Presupuesto [planning and budget area], Área de Urbanismo e Infraestructura [Urban planning and infrastructure], Área de Asuntos Ambientales [ecological department], Área de Vivienda [Housing]. These are the ones we were the most interested in as they gave us insight into the organization as well as their inner workings. Some questions we asked were:

Questions:

- What is the process of signing up?
- How many volunteers do you have?
- What are some struggles you have with the current volunteer management system?
- What is there anything you would like in the volunteer management system?
- What is the process of signing up?
- How is communicating with other departments?

While meeting up with the different departments, we also held a meeting with a G-8 manager of the department of education. It was important to get the perspective of the program as the G-8 are leaders in the organization as well as volunteers, so they have a unique view of both planning the tasks and executing the tasks. Through the interview, we hoped to get a better understanding of the community as well as what the leaders want from the VMS. Some questions we asked were:

Questions:

- Could you tell us a little about the communities?
- What are some of the tasks you do?
- Some of your goals for the future for the program?

Once on site, we held interviews with the department heads to learn more about their specific needs for the VMS. It was concluded that the current system they had been using was unorganized and not as effective as it could be. ENLACE was using an extensive spreadsheet where volunteers had to input their hours to quantify their work. Unfortunately, one of the major issues they ran into was the fact that many volunteers did not input their hours and this work was left for the department heads. Also, the leaders had to calculate the number of hours per volunteer by hand and nothing was autogenerated. The reports also were generated by hand which was very time-consuming. Overall, their current system left a general lack of communication.

### 3.2 Objective 2: Identify a suitable VMS (Volunteer Management System) for the Sponsors, Including the Development of an Internal Solution

To complete this objective, we took the information gathered from objective one to generate a comprehensive list of requirements, for the commercial VMSs that were found before arriving in

Puerto Rico, that satisfy Caño3.7's. The team learned about different departments through interviews helping us narrow down the requirements to the important ones. The team began this objective around week two to week three.

The VMS needed to have the following requirements:

1. Available in both English and Spanish
2. Register volunteer information and store it in a database
3. Customized stored volunteer information
4. Quantify volunteer hours and generate reports in PDF format
5. Generate a volunteer schedule/calendar where you can add events
6. Generate summaries for scheduled events
7. Communicate between VMS administrators
8. Have different areas for each department

The VMS should fit all Caño3.7's requirements, the largest two being that the language can be changed to Spanish and that the VMS can produce statistical reports. We referred to the VMS Table 3 in the Appendix as we checked off VMSs. The table holds the information of:

- annual/monthly cost
- volunteer registration capacity
- platform type: cloud, SaaS, Web, etc.
- whether it has technical support
- whether it allows admin to schedule events
- whether it stores information

We sent out emails to each VMS company to confirm that they could accommodate the requirements above. The team then went through the table and eliminated any VMS that did not meet the requirements. Afterwards, we requested demonstrations from each of the remaining systems, with only one company, *BetterImpact*, responding. While we were researching the

commercial VMSs, we also proposed an improvement of the current volunteer management system in place at Caño3.7.

When researching ways to improve their existing system, we found a platform called *Retool* that can create web apps by linking to Google sheets and forms which they already use. *Retool* is useful platform that can be used to create customizable tools. They have some set apps for the interface that help aide the process of building. While researching the different commercial VMSs, the team found downsides to those systems. We found that they usually require the volunteers to create an account and sign-in to the VMS. It was concluded that requiring volunteers to sign-in would add an unnecessary obstacle to an already unfavorable process. Another downside to the commercial VMSs is the high cost to purchase. These aspects were taken into consideration while creating our system: the Volunteer Management Dashboard (VMD).

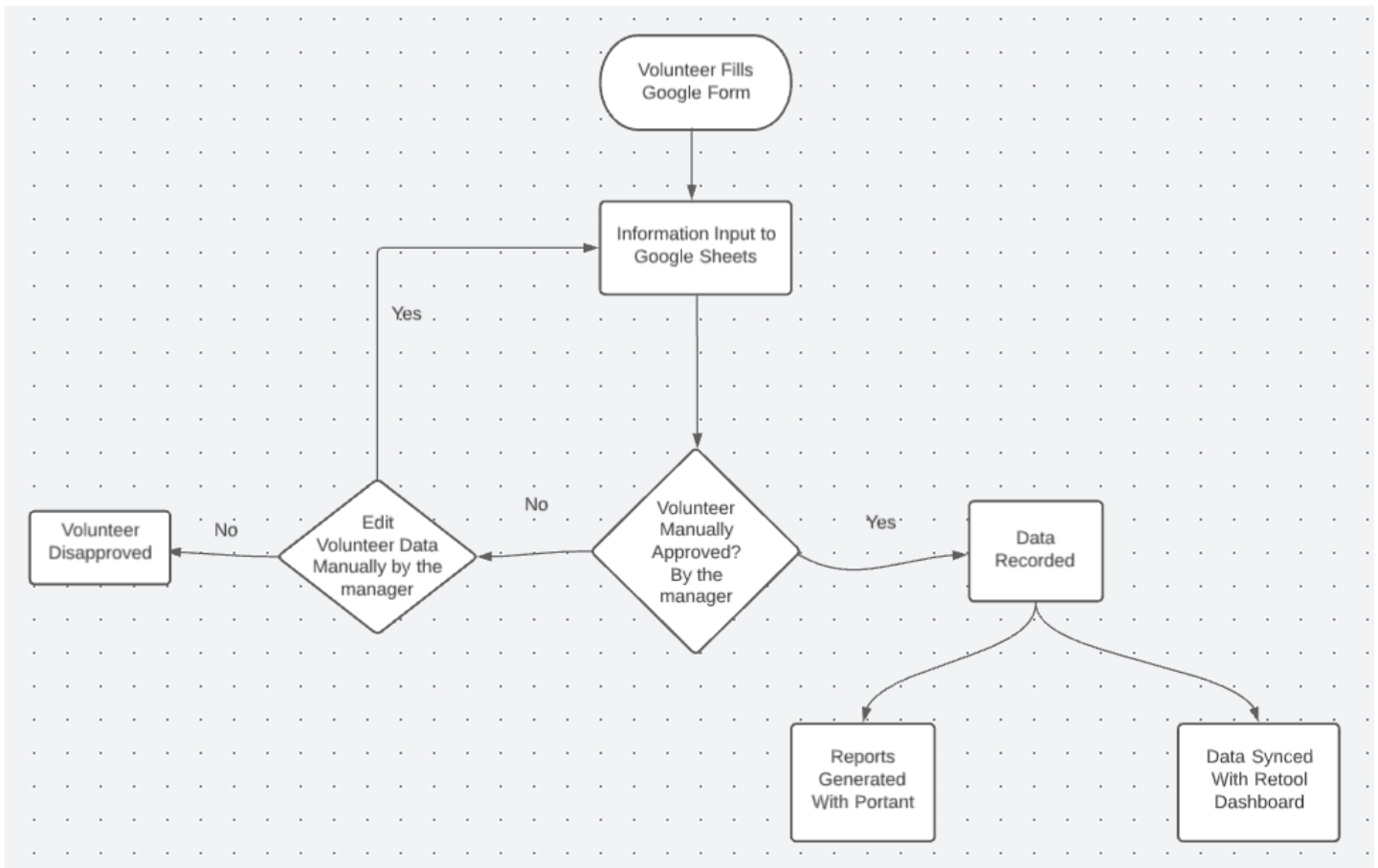


Figure 6 shows how the information flows through the system. When the volunteer fills out the Google form the information is stored in the Google sheets. A manager will need to validate the



information inputted by the volunteer through the VMD. If the information of the volunteer is not valid the manager can edit the input from the form in the Google sheet. When the data is approved it goes through the system. The data is compiled into different graphs that can be accessed on the VMD. The form entries are formatted into a report with the use of a third-party Google Sheets plugin called “Portant”.

We decided to develop this solution because it can fulfill the most essential needs of Caño3.7 without the extremely elevated cost of purchasing a commercial VMS. The strength of a custom solution comes in the inherent ability to adapt and grow as the organization does. To develop our VMD we focused on automating the existing volunteer management pipeline, by displaying graphs and generating reports automatically once data is validated by a manager. The team also developed a home page for the VMS where the volunteers can access an orientation video about Caño3.7 and their goals. After watching the video, they get access to the liability forms that all the volunteers need to fill before they start doing any volunteer work. By having this introductory video, onsite orientation can be reduced to only task specific details.

While *BetterImpact* has many features that could be useful to Caño3.7 and fit all the requirements, we found that the system had drawbacks as well. It was difficult to learn and had many unnecessary features for the organization for the cost of \$2,036 annually. As discussed earlier, all volunteers must also create an account which would be a hindrance to some volunteers. The VMD we created fulfilled all of Caño3.7’s needs for a VMS for a fraction of the *BetterImpact* price. With our VMD, we could provide all the necessary aspects like auto-generating a statistical report for only \$120 annually per administrator. Due to these reasons, we identified the VMD as the best option for Caño3.7.

### 3.3 Objective 3: Implement a VMS for Caño3.7.

In this objective, we implemented the internal solution that we named the “Volunteer Management Dashboard” for Caño3.7 as it was decided to be the best system for the organization. In this objective, the team catered the system to Caño3.7 and customizing it to meet the preference of managers, Kimberly, and Maria.

After producing the beta version of the system, the team met with the managers from different departments, to review the system as well, as Maria and Kimberly. The team demonstrated how the volunteer’s data flowed from the Google forms to the Google sheets and

onto the dashboard. We then showed the different features of the system. After introducing the system Kimberly and Maria gave suggestions for the tool, and we implemented those changes. This was the general process of each meeting.

After iterations of the system, we created our final version of the VMD. The system was then incorporated into the organization by creating them a *Retool* account and implemented the Google sheets into their Gmail account, so they have access to the system and can make any changes to it. We created two manuals for ENLACE to help them use the system: *Google Forms and Sheets as a VMS Component* and *Using a Retool Application as a VMS for Nonprofit Organizations: A Guideline*. We also trained Kimberly in the system using these manuals and used her comments to re-evaluate the manuals and the system.

In the case that ENLACE does not want to use the VMD for Caño3.7 in the future, the team left ENLACE with a plan on how to proceed with implementing *BetterImpact* in *Selecting a Commercial VMS for Nonprofit Organizations: A Report for ENLACE*. If the organization decides to not go with *BetterImpact* and instead a different commercial VMS, they can refer to *Selecting a Commercial VMS for Nonprofit Organizations: A Guideline*, which is also referenced in the manual for ENLACE.

#### 3.4 Objective 4: Formulate a lasting connection between WPI and the Sponsor.

This objective aims to leave the door open for future projects between Caño3.7 and WPI. We achieved this by speaking to community leaders and expressing interest in continuing similar work through the Puerto Rico project center. This objective is last on our list as we focused on delivering the best VMS to the Sponsor.

The aim of this objective is to open the door for future IQPs to work with the Sponsor. We focused on making a relationship with the sponsors mainly with the Project ENLACE because we were working in their office. Building a relationship will create a possibility to make future projects. This objective was pursued during the entirety of the project. We want to leave a door open to other IQP groups to work with this organization.

The team met with all the departments working with Caño3.7 and had presentations about each and learn more in depth the functioning of the organization. This meeting where hold to understand how the organization worked and understand the volunteer work on the organization. This was also a crucial part to make a connection with the organization because we could identify

in which department WPI could help with more projects like this IQP. The most distinguished department that we found that WPI could help the organization will be on the Urban planning and infrastructure department manage by Mario. We decide to schedule a meeting with Mario, our Advisors, and the director of the Puerto Rican Project Center to discuss possible future projects that would help the department and the complete organization and have as a main goal help and support the Caño Martin Peña community.

The team also attended multiple activities held by the organization like LIJAC where we could learn more about the Caño Martin Peña community. LIJAC is a youth community engagement program with the main goal of educating the area's young residents about issues plaguing the Caño Martin Peña. We participated in a workshop where the young residents speak up and share their point of view on the different topics. This project is held on Friday afternoons making it a strategic time because it provides a safe space for the kids of the community to hangout.

## Chapter 4 Outcomes and Deliverables

By researching VMSs and custom solution options as well as analyzing the information gathered at our site, we developed the following findings concerning the development of a third-party VMS, custom options, and an orientation video that aims to increase the volume of volunteers for our sponsor.

### 4.1 Commercial VMS

On November 9, 2021, the team took a demo call with the company *BetterImpact*. This company is a volunteer management system that the team reached out to, to gain a better understanding of the capacities of the software tool. During this meeting, we went over the different functions and possible utilization of the tool in the Caño3.7. We learned how the VMS would work in a Spanish based environment and if the software met all the requirements set to be a suitable VMS. See requirements at objective 2 on the methodology chapter.

*BetterImpact* can generate reports of any kind that compile and expose the volunteer data. The software can manipulate and show the data in various types of reports that the manager selects to have an easy understanding of the volunteer work via the organization. The automation of the reports is a valuable asset for any NGO that utilizes volunteers in their daily work. A drawback of utilizing *BetterImpact* is that the cost of the VMS is based on the amount of volunteers that sign into the software. For the number of volunteers, the Caño3.7 has on a regular year the cost of utilizing *batter impact* would be around \$2500. The VMS also includes a lot of extra assets that were found to be unnecessary, such as having an automated birthday message reminder on the birthday of the volunteers. These components can be useful for a larger scale volunteer operation but not for the scope that the Caño3.7 has. The team also concluded that reaching out to companies as students can be challenging while obtaining quotes and demos of the different VMSs in a short period of time. Sometimes the VMS companies took a long time to respond or did not respond at all. This put a halt in the process and prohibited the team from proceeding with certain companies.

#### 4.1.1 Selecting a Commercial VMS for Nonprofit Organizations: A Guideline

A Guideline for Selecting a VMS for Non-Profit Organizations in the form of a manual was created to aid in the process of selecting a commercial VMS for a given non-profit organization. The manual is written to the audience of the general public so that anyone working

with a non-profit organization can feasibly read and understand it. The document provides examples of VMSs with general descriptions then outlines the process of selecting a commercial VMS.

This manual was developed so that non-profits other than ENLACE could also benefit from our work. The process of selecting the best possible VMS takes time, and this tool aims to decrease the amount of time the non-profit takes to select the system they need so that more time is left for them to utilize the system to accomplish their goals. This outcome was created given the background research that was done surrounding third party VMSs as well as the experience we gained from going through the process with our sponsor, Kimberly. More information on third party VMSs can be found in the appendix.

It was gathered that writing for a wider audience is difficult as opposed to writing and researching that is catered towards one specific organization (such as ENLACE). Without knowing the specific needs of an organization, it was difficult to include all such information that we speculated might be important. All the volunteer programs are different from each other because being a volunteer is a wide term and depending on the specific need of the organization the managing of the people need to adapt to.

#### 4.1.2 Selecting a Commercial VMS for Nonprofit Organizations: A Report ENLACE

A Guideline for Selecting a VMS for ENLACE in the form of a manual was created to aid in the process of potentially selecting a third-party VMS in the future. The manual is specifically catered toward the needs and requirements of ENLACE so that they can feasibly read it to potentially select a third-party VMS if they find themselves in the position to do so. The document provides examples of VMSs with general descriptions then outlines the process of selecting a commercial VMS.

This manual was developed for documentation of the steps we took to select a VMS for ENLACE so that in the future, the organization can select one on their own if needed. The manual provides the general steps any non-profit organization can take and then dives deeper into the specific steps that we took for ENLACE regarding their requirements. A table is included with all the VMSs and requirements for ENLACE that was used in the process of selecting a VMS. This kept the team organized and kept the communication status clear.

It was found that writing toward ENLACE was difficult because the team tried to keep the writing simple enough to understand but also tried to include key details that are necessary. Writing in third person was also proven difficult since the process was carried out in person by the team collectively but was written as if it was not. In addition, breaking up the process into steps was found harder than expected. The process itself naturally flowed from one step to the next so putting the process into concrete steps was somewhat forced.

## 4.2 Volunteer Management Dashboard (VMD)

The Volunteer Management Dashboard was created as an extension of how Caño3.7 managed their volunteers. The dashboard displays analytics regarding volunteers and the work they've done. A manager is required to validate each entry before it is included in the graphs. This deliverable is supported by the two manuals that follow.

It was found that creating a dashboard was difficult because data needs to be displayed in a concise and straightforward way. A logical flow needed to be established with the most relevant features appearing at the top of the application and elements that would be utilized less frequently closer to the bottom.

### 4.2.1 Google Forms and Sheets as a VMS Component

An instruction manual for the Volunteer Management Dashboard: Google Sheets was created to aid in the process of inputting information into the Google sheets for a given non-profit organization. The manual is written to the audience of the public so that anyone working with a non-profit organization can feasibly read and understand it.

This manual was developed so that non-profits, such as ENLACE, can be sure they are utilizing the tool the way it was intended to be used. The manual was made to fully explain the Google Forms and Sheets that are being used as back-end data storage for the Volunteer Management Dashboard. This will provide a breakdown of the individual Sheets as well as the associated tables and aggregated data. The manual uses pictures to explain how exactly volunteers can log their hours.

It was gathered that writing for a wider audience is difficult as opposed to writing and researching that is catered towards one specific organization (such as ENLACE). It is important to be straightforward and concise when writing to people with various backgrounds.

### 4.2.2 Using a Retool Application as a VMS for Nonprofit Organizations: A Guideline

An instruction manual for the Volunteer Management Dashboard was created to aid in the process of learning how to use the Volunteer Management Dashboard for a given non-profit.

The manual is written to the audience of the public so that anyone working with a non-profit organization can feasibly read and understand it. The document provides step by step process of how to use the tool.

This manual was developed so that non-profits, such as ENLACE, can be sure they are utilizing the tool the way it was intended to be used. The step-by-step instruction ensures there will be no confusion so that any non-profit can use the software on their own.

It was gathered that writing for a wider audience is difficult as opposed to writing and researching that is catered towards one specific organization (such as ENLACE). Also, giving external resources is important. The last chapter of the manual contains links to other sites that can further explain how the software works. Visuals were also found to be useful for understanding the process.

### 4.3 Caño Information Video

An information video about the Caño was created for the use of ENLACE to increase the number of volunteers in the organization as well as to spread awareness of the goals of ENLACE. The video will be played for all volunteers before volunteering on behalf of Caño3.7. The video provides a background of the history of the area and information surrounding ENLACE, the Land Trust, and G-8. The video is 15 minutes long and aims to keep the attention of volunteers with music and smaller video clips.

The purpose of creating this video was not only to provide information about Caño3.7 to the volunteers, but also to get volunteers enthusiastic about the work that they have signed up to do. In addition to providing a VMS for ENLACE, we were also asked to help the general state of the volunteer program. To increase organization, our goal here is to inform and excite the volunteers so that they are also aware of the work they are doing.

It was found that creating an informative video for an audience such as the volunteers of ENLACE can be difficult as a lot of information should be conveyed yet it must be concise enough to keep the attention span of the viewers. Delivering a video in both Spanish and English is also proven challenging.

## Deliverables List

The following deliverables were developed to achieve the overall objective of the project.

1. Commercial VMS option

2. Guideline for Selecting a VMS for Non-Profit Organizations
3. Volunteer Management Dashboard
4. Instruction Manuel for the Volunteer Management Dashboard: Google Sheets
  - a. Also available in Spanish
5. Instruction Manuel for the Volunteer Management Dashboard: Generating Reports
  - a. Also available in Spanish
6. Instruction Manuel for the Volunteer Management Dashboard: *Retool*
  - a. Also available in Spanish
7. Caño Information Video
  - a. Also available in Spanish

## Outcomes List

1. We created a strong lasting relationship between WPI and ENLACE to open the door for future WPI projects to be sponsored by ENLACE.
2. We have identified the needs of ENLACE to properly select the best possible VMS option.

## Recommendations List

### VMS

If this work was carried out in the future, a few features could be added to the Volunteer Management Dashboard to better suit the needs of Caño3.7.

1. Bulk input for multiple volunteers
2. Calendar with events that can be edited by department managers
3. Using SQL as the backend for the Volunteer Management Dashboard instead of Google sheets and implement the Google forms as *retool* forms to consolidate the workflow.
4. Add an email communication component to allow managers to quickly contact volunteers
5. Add WhatsApp communication using the WhatsApp API for multiple contact methods

## Conclusion

The team proposed two solutions to improve the volunteer program of Caño3.7. We presented to the organization a solution based on acquiring a commercial VMS and a custom solution built



to fit the specifications of Caño3.7 called the Volunteer Management Dashboard, or VMD. The commercial option contains a lot of extra features that the team concluded was not necessary for Caño3.7 while the VMD does not include these extra features but still accomplished the same goals as the VMS.

The first solution that the team presented to the organization was the acquisition of *BetterImpact*. The team did extensive research on the VMS market. With the list of requirements, the team gathered from the needs of Caño3.7, the original list of nine potentially suitable commercial VMSs was narrowed down to the top three options. This was based on a demo held with one of the commercial VMSs as well as the lack of communication from certain commercial VMSs. The three commercial VMSs were Volunteer Hub, Hands on Connect and *BetterImpact*. After speaking with representatives from each vendor the team decided that *BetterImpact* was the best option for the Caño3.7 on the market. *BetterImpact* is a robust system capable of compiling and managing volunteer data. The system is completely available in Spanish and English and changing the language is intuitive and easy. This was one of the highly desired features of a commercial VMS that Caño3.7 requested. The system can generate many kinds of statistical reports that can be used for grant applications. One negative to this is that there are some types of reports that are unnecessary for the organization and can cause confusion. Another negative of *BetterImpact* is that every volunteer needs to create an account to use it. This could be a barrier for some prospective volunteers and may restrict the amount of data collected. Forcing the volunteers to create an account add an extra step for an already undesirable task. At this point, the team began to lean more towards a custom solution that does not include any of these undesired features. Since work was done throughout this selection process, a guide with the steps of acquiring and implementation of a commercial Volunteer Management System was written and delivered to Caño3.7 to be potentially used in the future. The guide contains general steps of how to select a commercial VMS as well as the specific documentation of steps taken on behalf of ENLACE.

The second solution that the team presented to Caño3.7 was the Volunteer Management Dashboard (VMD). The team developed the VMD, a system that is capable of compiling and computing all the volunteer data of the organization. The VMD does not require volunteer to register and create an account, making the system more accessible and easier to use. The

volunteer time is submitted through a Google form that the user can access without signing into an account. The VMD is also capable of producing automated reports and shows the analytics of volunteer data that has been validated by a manager. The team also implemented an orientation page for the volunteers to learn about Caño3.7. In this page new volunteers can access an orientation video and can fill the two liability forms before working as a volunteer with Caño3.7. The purpose of this orientation page is to increase awareness of the organization to ensure that all volunteers are knowledgeable about the work they are doing before they volunteer.

The team preferred the Volunteer Management Dashboard over *BetterImpact* because the VMD is a custom solution developed specially for the Caño3.7 and it has no auxiliary features that could bloat the system or intimidate the user. In comparison to *BetterImpact* which had many features that were deemed unnecessary by the team and Kimberly. Annual price is also a significant factor to consider when choosing between the two options. *BetterImpact* adjusts pricing based on the volume of volunteers in the organization, an estimate of 1500 volunteers was used to get a quote of \$2035 per year. The pricing of the VMD is based on the number of administrator accounts. Our team recommends the Team plan for Caño3.7 which comes with all the required functionality and costs \$120 per administrator account per year. If Caño3.7 selects the VMD they will have access to many different resources to expand the tool to adapt to any shift in requirements in the future, these resources include two manuals written by the team detailing certain routine operations such as adding a component to the VMD. It was concluded that selecting the VMD would save a lot of money and will still carry out the desired tasks for Caño3.7. The guides also will aid in any potential confusion when using and implementing the VMD.

Along with the development of the VMD for the sponsor's specific needs, the team has also created a version that can act like a template for other organizations to use. It is a fully functional version with dummy data for the purpose of demonstration. The template can be downloaded and imported into *retool* for an organization to truly customize it and implement it in their own volunteer program. The team detected that the market of VMS lacks a less expensive option. Developing an option that can fulfil the organization's requirements and be less expensive is a big advantage for the organization. The idea that any organization can download the VMD and implement it on their own can be the starting point of a better management of the volunteers. This will allow the organization to avoid expending time gathering the volunteer's data and instead use

that time and resources to a better use in the organization. A VMD implemented into a non-profit has the power to simplify the current volunteer management system and optimize efficiency of the organization.

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## Chapter 5 Appendix

The following section of the proposal is extra information. It includes research that was not applicable to our project as well as more details on the different VMS. It holds an enlarged version of Table 2 and our informed consent statement.

### 5.1 Ecology in the Caño Martín Peña

The San Juan Bay Estuary is home to 33% of the total mangrove acres of PR, 8 endangered animal species, 17 endangered plant species, 160 bird species, 19 reptilians and amphibians, 124 fish species, and 300 wetland plant species (Estella, 2021). Because of the flooding and poor sewage system clogging up the canal, biodiversity is threatened. Diseases such as asthma, gastrointestinal disease, and skin allergies all have a greater threat to those living along the Caño Martín Peña compared to those living in Puerto Rico generally. Table 1 below shows the percentage of people exposed to these threats in the Caño Martín Peña vs. Puerto Rico.

Table 2 2 Threats to Public Health around the Caño Martín Peña

Disease	Caño Martín Peña	Puerto Rico
<b>Gastrointestinal Disease</b>	31%	20%
<b>Asthma</b>	44%	25%
<b>Skin Allergies</b>	35.3%	24.8%

The canal connects the San Juan Bay, home to the busiest port in the Caribbean (80% of goods enter Puerto Rico) and the San Jose Lagoon, where benthic communities reside but are threatened. Benthic communities are found at the very bottom of the ocean and include a wide range of animals such as clams, worms, oysters, and crab-like organisms. The loss in depth of the lagoon has resulted in a threat to the benthic communities as well as flooding surrounding the Luis Manoz Marin international airport (Estrella, 2021). A more recent threat to the area came in the form of Hurricane Maria, back in 2017. Hurricane Maria was a category 5 hurricane and is recorded as the worst natural disaster in history to affect Puerto Rico. The entirety of the island lost electricity and access to clean water and food became very scarce. Within the Caño Martín Peña, at least 75 families in the community lost their homes and 70% of the community flooded with contaminated water (MercyCorps, 2020). More information regarding projects working to relieve these problems can be found in the Appendix in section 4.4.

### 5.2 Additional Information on different Volunteer Management Systems from chapter 2.5

### 5.2.1 *Volgistics*

*Volgistics* is used by 3400 organizations and works well with windows. The developers have developed this VMS from 20 years of experience working with volunteer leaders. It was released in 2004 and has been improving since then. It offers a lot of customizations to its system. The different fields in *Volgistics* can be changed to have different titles. It is a web-based system and there is no limit to how many volunteers it can take. However, the more volunteers, the higher the cost of the system will be. The price also depends on the number of users that oversee the system as well as added features. The users are allowed to change the schedule and assign tasks to volunteers. *Volgistics* offers technical support, stores data, and can produce statistical reports. One downside to this VMS is that it does not offer the option to change the language of the system. The language can change using Google translate, but that is not reliable.

### 5.2.2 *Samaritan*

This VMS, *Samaritan*, also offers many customizations like *Volgistics*. It can be used to execute the process of recruiting, managing, scheduling, and tracking volunteers. They have automated steps, so that the system will be uploaded with the information input. This VMS is more expensive than the other volunteer management system. The system does offer multi-language translation which is convenient for the sponsors who first language is in Spanish. It also offers the ability to offer different forms to different types of volunteers like underage volunteers. They also help with the customization of the system by hearing what the organization' needs and requirements are and then build an ideal system for the organization. One downside is that it is mainly used in hospitals and medical facilities to help organize volunteers that come to help with patients. It can be used for non-profit organizations though.

### 5.2.3 *YourVolunteers*

*YourVolunteers* spent 14 years creating different types of applications. The system is automated and runs very quickly. This VMS is very cost friendly, offering a free version with advertising. Although there are probably some limitations, it can hold 1000 volunteers per focus or field and add schedules to the calendar. The administrators can also receive daily summaries. The premium version is only twenty dollars a month. It has all the things the free version has as well as allowing administrators to send messages and notes to volunteers and sending week schedules through email. *YourVolunteers* also offer a custom version as well. A drawback to this system is that the administrator does not have 100% control over the shifts. The volunteers in this system can see the shifts available to them.

### 5.2.4 *Volunteer Impact (Better Impact)*

The system is like *Volgistics* and *Samaritan* in that it also has customization aspects. *Volunteer Impact* offers customizable volunteer profiles and organization profiles. Communication using the system is available, so the administrators can email individuals or a large group or can text as the system is also supported through the phone through an app. This system offers QR code sign ins, track records, learning modules, backups, and control over the scheduling. The system can be used for organizations with multiple locations or departments. The price depends on the number of volunteers, so there is no limit to the number of volunteers the system can handle. A



big advantage to this system is the language can be set as well as the region without using Google translate like some other VMS.

#### 5.2.5 *Volunteermatters*

*Volunteermatters* is a good system for group volunteering as a group leader can sign up for the whole group. It offers training resources and feedback loops so that tedious tasks can be processed automatically. This system can also be used on any device, so it is accessible to everyone. There is a growing plan that can hold 500 volunteers and 2 admins. The volunteer application form can be customized, and the system can provide history reports. The professional plan costs more than the growing plan but allows 10 admins and can hold 1500 volunteers. It provides those same abilities as the growing plan, but an additional aspect is the customizable volunteer portal as well as automatic on-boarding processes.

#### 5.2.6 *Volunteer Hub*

This management system offers three different plans that vary in price. There is a plus plan that is 150 dollars a month and a pro plan which is 269 a month, both having a setup fee of 595 and 795 dollars respectively. Each plan also has a different volunteer registration capacity with a difference of 1000 volunteers between the two plans. This system also offers an enterprise plan that can hold at least 2500 volunteers. The system is cloud-based, has technical support, allows an admin to schedule events, and provides statistical reports. One disadvantage to this system is that to have store info, there is an extra fee of 348 dollars/year. Another disadvantage is that the language can only be changed in the kiosk app.

#### 5.2.7 *Sumac*

The system presents many different plans, each with varying prices and the number of volunteers it can take. It starts at 30 dollars a month and goes up to 250 a month. The different plans also vary in the amount of storage available from 5 gigabytes to 50 gigabytes. This system allows the language to be changed as well as offers technical support and statistical reports. It also offers the option of integrated the system into an organization's website. A drawback is that it is web-based and not cloud-based, which is what ENLACE prefers.

#### 5.2.8 *Helper Helper*

*Helper Helper* has a software platform, and, like some other systems, it has an app. The system allows the admins to schedule events with specific time frames to further help with organization. The admins can also only have some sections available to some volunteers. The volunteers can also choose from the tasks available. The system allows can put volunteer registration on the organization's website, so the procedure of processing is all done through the system. It also offers single sign on integration for one-time volunteers. The people at *Helper Helper* work together with the needs of the buyer to create the best platform for the organization.

### 5.2.9 *Hands on Connect*

This system is a cloud-based system that allows one to customize the look and theme of the software. *Hands on Connect* also offers technical support to help an organization throughout the whole process. They offer two types of administrative services: maintenance system administrator and virtual system administrator. Both services have a person making sure the system runs smoothly as well as creating the template or designing the look of the system. The virtual system administrator, however, offers more services like day-to-day support as well as refining the data in the database. These administrators make sure the VMS is the best it can be.

VMS	cost	Volunteer registration capacity	Platform type	Technical support	Allows admins to schedule events	Stores info	Language change	Statistical report
Volunteer hub =	Plus Plan: \$150 / month Pro Plan: \$269 / month Enterprise: custom	Plus Plan: up to 1000 Pro Plan: up to 2000 Enterprise: 2500+	Cloud	yes	yes	Cloud file storage: \$348/year	Kiosk app: can change language	yes
Volistics =	depends on number of volunteers, archives, operators, and added features	No limit	Web	yes	yes	Yes, but pay extra for Vidoocs (more options)	Google translate	yes
Sumac =	starter: \$35/month standard: \$75/month growing: \$150 / month established: \$250 / month world changer: contact	750 reports 1500 reports 4500 reports 20,000 reports 5 million reports	Online (ANW) database	yes	\$85 / month (add on)	5 gig cloud 5 Gig cloud 10 Gig cloud 20 Gig cloud 50 Gig cloud	yes	yes
Helper Helper =			Software - web	yes	yes			yes
Hands On Connect =			Cloud	yes		Has spanning backup		yes
Samaritan =	Start at \$4750 / year	unlimited	Cloud	yes	yes		yes	yes
YourVolunteers =	Free: \$0/month – with ads Premium: \$20 / month	1000 per focus 2,000 per focus	Cloud	no	yes			yes
Volunteer Impact (better Impact)	Depends on volunteers \$240 / year – 50 volunteers \$876 / year – 500 volunteers \$4344 / year – 5,000 volunteers	unlimited	Cloud	yes	yes	yes	yes	yes
Volunteermatters	Growing plan: \$99 / month Professional plan: \$249/month Enterprise plan: custom	500 volunteers 1500 volunteers 2500 volunteers		yes	yes	yes		yes

Table 3 Different VMS (larger view)

### 5.3 Informed Consent Statement

Hello, we are students from WPI working with Caño3.7 on improving the Caño Martín Peña area. We would like to hear your thoughts about the area, problems surrounding the area, and the volunteer work being done to improve the area, so that we can help the community members. We might include the information you provide in our report that will be published online, if that's alright with you.

You do not have to discuss anything that you do not want and can stop anytime. If at a later date you decide to have your words rescinded, please let us know. If you have any questions now, feel free to ask and if you have any questions later, please contact us at [gr-ctpr-cano@wpi.edu](mailto:gr-ctpr-cano@wpi.edu) or speak to us directly. Thank you.